

## Report on the 2nd Japanese-American-German Frontiers of Science (JAGFOS) Symposium

Dr. Chika Minejima, Planning Group Member (PGM), Co-Chair on the Japanese side,  
Associate Professor, Department of Natural Science,  
College of Liberal Arts, International Christian University

The Japanese-American-German Frontiers of Science Symposium (JAGFOS) was held at Kyoto Brighton Hotel from September 26 to September 29, 2019. It was a kind of event I absolutely want to participate in, so I rushed to the hotel. When I checked in at the lobby, I saw a group of Japanese, American and German researchers already having a meeting over their laptop screens. They looked smart. Would my session be okay? The atmosphere was overwhelming. I hurried to the venue with excitement.

The symposium brought together the researchers of six fields: “Biology/Life sciences”, “Chemistry/Materials science”, “Earth science/Geosciences/Environmental sciences”, “(Applied) Mathematics/Computer Science/Engineering”, “Physics/Astrophysics” and “Social Sciences.” Besides making presentations and having discussions on the cutting-edge topics, they would spend time together, eat together and interact each other while lodging at the same hotel for 3 nights and 4 days.

To quote the JSPS website, in this international symposium, talented young researchers from Japan and the counterpart countries lodge together to engage in cross-disciplinary discussions on leading edge scientific topics, aiming at fostering future generations of leaders and building networks between world-class leaders. It has been carried out by the top agencies that serve to promote academic research in their countries: Japan Society for the Promotion of Science (JSPS) in Japan, Alexander von Humboldt Foundation (AvH) in Germany and National Academy of Sciences (NAS) in the United States. Participating in the symposium was a very inspiring experience. I would like to report the experience to describe its atmosphere and why it was so great from my personal perspectives because I want to invite you to join and get inspired by it, too.

Why is the FoS symposium so fruitful? Why is it so valuable? The first thing that came to my mind was the communication with top-notch scientists. Some people may think the study of science is totally objective and inorganic. Still, science is pursued by people. The frontier of science is advanced by the efforts of scientists. Academic theories have been gradually approved in communities and gaining their trust is necessary. To me, doing science is one of the very humane activities. For this reason, meeting with the people on the science’s frontline and knowing each other has a profound significance.

Achievers and people who work hard to achieve in their professions seem to shine in my eyes, whatever they may be. They make positive vibes as they challenge themselves to climb up to the hilltop though they sometimes finish the day complaining about everything. They are like artists who push themselves to the limit. Normally, it may take a few years before people become close enough to have conversations on their problems in deeper levels. But I could smoothly engage in such dialogue with the people I came to know during the FoS symposium. Was it because you can be nicer with the people outside of your field as they were not your competitors? More than that, the reason might be a shared sense of comradery to some degree.

It was an opportunity you could never have anywhere else: we just had enough time to listen to top researchers' philosophy, lives, hobbies, troubles and even bad jokes for 3 nights and 4 days while having meal together. I am not sure if someone had ever said, "Learn from the top level people to reach the top!" Nonetheless, I am curious about their thoughts and lives.

Besides, a networking can bring a practical advantage, such as improved efficiency in carrying out tasks and/or joint research. The best way to become friends is to share an excited experience. Having a nice experience together during the FoS symposium also contributes to fostering a friendship. A curiosity-driven side project, which conducted with the friends, becomes surprisingly easier to advance and more and more enjoyable. Isn't it mainly because of this element called friendship?

Speaking of what makes the FoS symposium valuable, I would say as follows. Pioneering research topics in different disciplines are presented in an easy-to-understand way. Q & A sessions are included in the program in which a participant can ask question directly to a top-notch researcher in the fields. Furthermore, the aforementioned friendly communication with other participants is an enormous advantage in my view.

In fact, who is chosen to be a participant of this symposium? The organizers carefully select top scientists from a variety of disciplines. A participant should be a researcher of age up to 45 or who have received their PhDs within the last 15 years. There are three categories of participants: a planning group member (PGM), a speaker or a discussant (general participant). All participants are selected by nomination. However, a general participant should be a newcomer to the symposium so as to offer more opportunities to many other researchers as possible. The second JAGFOS symposium was held containing the sessions of six fields. Each session consisted of one PGM, one speaker and 2 discussants per country. The total number of participants from three countries were initially expected to be 72, though it turned out to be 68 due to sudden circumstances.

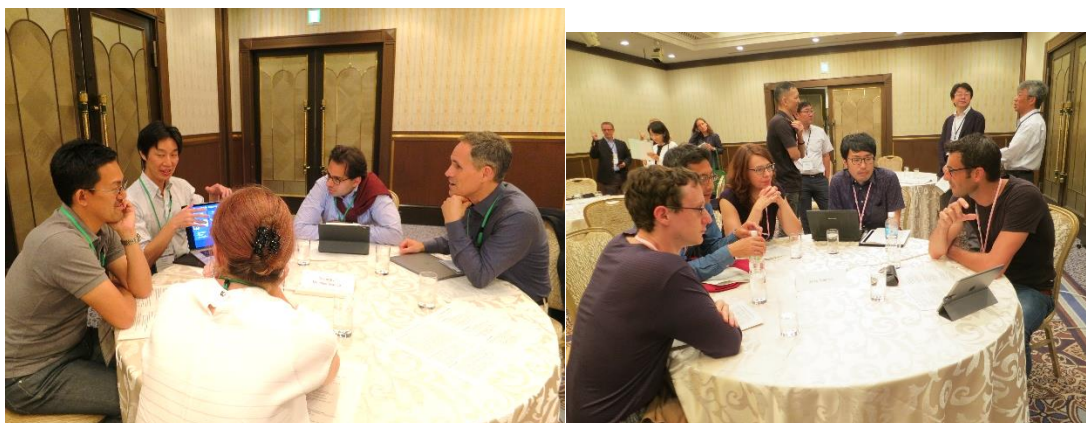
In addition, the leading edge science topics in the six sessions were determined by total 18 PGMs, one per each field and country. Just a year ago, in September 2018, at the meeting called PGMmeeting, the Japanese, American and German PGMs of all sessions gathered together in Kyoto to make presentation on exciting draft topics and cast their ballots to select the ones which were especially cutting-edge,

timely and thought that everyone can be involved in. Earlier, in June 2018, the Japanese PGMs discussed about the draft topics to prepare their proposal to put forward at the abovementioned PGMeeting.

Since then, the PGMs contacted the nominated introductory speakers and session speakers to ask them if they could present their research topics in the symposium and coordinate the sessions. Each session has a speaker from each country. I was appointed not only as Co-Chair of the symposium, but also as a PGM of the session in Earth Science/Geosciences/Environmental Sciences. As a PGM, my task was to select speakers, request the world renowned researchers to give lecture and organize their presentation contents on the authority of the Japan Society for the Promotion of Science. I was wondering if my session could thrive.

#### **Thursday, September 26: Session Coordination Meeting and Welcome Reception (Day Zero)**

The first and last Session Coordination Meeting was held before the start of welcome reception. It was attended by PGMs, introductory speakers and session speakers. While having communicated in emails, all met each other for the first time. I had to make blunt requests to the three frontline researchers of the field, who were ranked at the highest level in the world, on their presentation slides, such as the followings: “please elaborate on your introductory talk,” “please change the order of the slides,” “your slides contain too many characters,” (and even worse,) “I suggest you to drop this portion of your presentation.” Who am I to suggest them that they should skip the slides that contain the irreplaceable data collected as a result of their hard working? How could I talk to them like that? But I simply wanted to make the session vibrant. I wasn’t afraid being rude because of that goal. Looking back, I really appreciate that all speakers kindly accepted such bold requests.



Each session holds the first and last coordination meeting.

At last, time to start the symposium. That day’s program included the Session Coordination Meeting followed by icebreaker to kick off a welcome reception. Sessions were scheduled to begin on the next day. The four-day schedule of the symposium is shown in the following table.

**Table 1:** Outline of FoS symposium program

	Morning			Afternoon		
September 26 (Thu.) Day 0					Session Coordination Meeting	Welcome Reception
September 27 (Fri.) Day 1	Opening Ceremony	Session 1	Poster Session incl. Flash Talk	Presentations by organizers	Session 2	Session on Open Access
September 28 (Sat.) Day 2	Session 3	Poster Session incl. Flash Talk		Session 4	Cultural Tour	
September 29 (Sun.) Day 3	Session 5	Session 6		Closing Session	Farewell Lunch	

The reception began with opening greetings and a toast that expressed a full of enthusiasm. Prof. Helmut Schwarz, Honorary President of the Alexander von Humboldt Foundation in Germany and I, Co-Chair on the Japanese side, gave opening remarks. Then, Prof. Hiroki Arimura, Vice-chairperson of the JSPS FoS Advisory Board, made a toast. The Japanese, American and German Co-Chairs cut the cake which was generously gifted to us from the venue (Kyoto Brighton Hotel). I received a warm welcome which made me feel again that it would be a momentous event. I was excited about the next three days.



Welcome reception



Cake cutting ceremony

### **Friday, September 27: Day One**

The program of the symposium was started with the opening remarks by Dr. Susumu Satomi, President

of the Japan Society for the Promotion of Science. Dr. Scott Kominers, Co-Chair on the American side, gave an outline of the symposium. He is one of the leading researchers in the field of economics in the U.S. He said he really liked the FoS symposium. It was so impressive that he said, “I am very excited about this symposium. I guess I was appointed as a Co-Chair because I had been obviously delighted to be involved in the former FoS symposium.” What is more, his presentation slides contained many pictures of Japanese comics. What do people think about Dr. Scott Kominers, Associate Professor at Harvard Business School, when they just hear his name and title? But, beyond the preconception gotten through reading thesis and watching news coverage, you can directly get to know his/her personality at the symposium. It is, again, a kind of element that makes the FoS symposium so attractive.



Figure 1: Dr. Scott Kominers makes a speech.

The time allocated for each session is shown in the following table. The unique feature of the program is that almost an hour is allocated to discussions which is the huge enjoyment in the FoS symposium. According to the FoS spirit, “No questions are dumb.” Let’s throw questions to the top-notch researchers in the field in person.

**Table 2:** Time allocation for each session

Contents	Allotted time
Speech by PGM to introduce the session	5 min.
Talk by an introductory speaker to introduce the session topic	20 min.
Presentations by two speakers on their cutting-edge research	20 min. × 2
Q&A	55 min.

The program was finally started. The topics of six sessions are shown in the table below. All topics seemed interesting. As you see, they were very wide-ranged and leading-edge. Those who are

interested in any of these topics can watch the presentations at the following website:

<NAS website> <http://www.nasonline.org/programs/kavli-frontiers-of-science/past-symposia/>

The speakers were the key leaders of their fields and the frontline researchers who were also capable of giving excellent presentations. Moreover, the presentations were designed to attract the audience who had been trained to think scientifically and to communicate them, despite a short period of time, with interesting aspects of science.

**Table3:** Fields and topics of the second JAGFOS symposium

\* Please refer to the following website for more information on speakers:

<JSPS website> [https://www.jsps.go.jp/english/e-jagfos/2019\\_02.html](https://www.jsps.go.jp/english/e-jagfos/2019_02.html)

Date	Session	Topic
Day One	(Applied) Mathematics / Computer Science / Engineering	Collective Intelligence
	Chemistry / Materials Science	Soft Matter and Metamaterials
Day Two	Physics / Astrophysics	The Entanglement Frontier: Quantum Information
	Social Sciences	Origin of Cooperation
Day Three	Biology / Life Sciences	Phase-changing Droplets as Nontraditional Organelles
	Earth Science / Geosciences / Environmental Sciences	Plastics in the Ocean and Microplastics



Some people are smiling as the question seems interesting.



A lot of hands are raised.





Q&A session. They seem to enjoy the session.



Asking question with much enthusiasm.



Three PGMs of Physics/Astrophysics session



The speaker explains the difficult notion of Entanglement in detail.

In addition to the sessions, the presentations on the host organizations were given by Ms. Sylvia Sprötge, the Alexander von Humboldt Foundation, Dr. Jörg Maxton-Küchenmeister, the Joachim Herz Foundation, and Ms. Miwa Shimizu, the Japan Society for the Promotion of Science. We had many other programs on that day including a poster flash talks in which the participants made presentations on their posters, a poster session and a session themed on the 'Open Access.' The session to discuss



Dr. Hayashi-Takagi gives presentation on open access.

the open access was moderated by Drs. Akiko Hayashi-Takagi from Japan, Scott Kominers from the U.S., and Ursula Wurstbauer from Germany. To me, the differences between research fields were greater than those between the countries. As such, it was a rare and important opportunity to improve communication between diverse disciplines.

In a poster flash talk session, each participant was given one minute to make his/her presentation to introduce his/her poster. This session was moderated by Dr. Kominers, the Co-Chair on the American side. He performed so lively just as if he was a master of ceremonies in the show. As he repeatedly said “Awesome!” during this session, the word became a sort of the symposium’s catchword.



Participants are waiting in line for their turn to give a poster flash talk. Even only for a minute, giving a flash talk makes us very nervous as if we become students again.

Poster flash talk

### **Saturday, September 28: Day Two**

After the two sessions and a poster session, a cultural tour and dinner were held on that day. A relaxed conversation smoothly took place and a warm friendship was formed as we were strolling and having meal together. The PGMs of the upcoming the third JAGFOS were introduced during the dinner at night. They were the lucky ones who could participate again. A loud applause was showered to thank them for accepting an important role of PGM and wish them the very best in the next symposium.



During the cultural tour to Fushimi Inari Shrines, with a smile, the participants engage in a relaxed conversation.





At dinner, Japanese PGMs celebrate the success of the symposium.

### Sunday, September 29: Day Three

Although the symposium seemed long at the beginning, the last day of the symposium finally arrived. A closing remark was given by Dr. Sanaz Mostaghim, the Co-Chair on the German side. She summarized the symposium showing the several pictures. She was a relaxed and positive person who typified the FoS symposium atmosphere. I found her pictures in many of the FoS symposium posters. As an active participant, she seemed to really enjoy it. Then, words of appreciation were given to the PGMs. Finally, the official announcement of the next JAGFOS symposium that would be held in the U.S. in 2020 was made by Mr. Edward Patte, the National Academy of Sciences.



Dr. Sanaz Mostaghim, the German Co-Chair gives a closing remark



Ms. Shimizu, JSPS, greets PGMs.

I would like to express my sincere gratitude to the Japan Society for the Promotion of Science, Ms. Shimizu, Coordinator of International Program Department, Ms. Suto, Ms. Ikezaki, Ms. Inagaki and

Ms. Takagi of International Research Cooperation Division I, for organizing such a great symposium. Every time I talk with them, their enthusiasm for fostering Japanese researchers encourages me. They wholeheartedly supported us all the way from the time I was invited to attend the symposium till its closing.

My thanks also goes to Ms. Nagakubo, Ms. Sakamoto and Ms. Fukuyama of Tobu Top Tours Co., Ltd., who prepared such a perfect conference. Without their warm arrangement for childcare services, several participants should have given up their attendance.

Prof. Yuko Fujigaki, Chairperson of the JSPS FoS Advisory Board, Prof. Hiroki Arimura, Vice-chairperson of the board, and Profs. Norimichi Ukita, Takeshi Kakegawa and Atsushi Wakamiya, who were the members of the board in charge of symposia with the U.S. and Germany, constantly offered valuable advice at the PGMeetings (including the Japanese side preparatory PGMeeting), and the preparatory meeting (rehearsal attended by the Japanese participants), all held in Japan. They were always reliable and showed the FoS symposium spirit. Various problems became to seem less complicated after receiving their advice. Furthermore, I want to extend my gratitude to Ms. Anke Teubner and Ms. Sylvia Sprötge, of the Alexander von Humbolt Foundation, Mr. Edward Patte and Ms. Danielle Crosser of the U.S. National Academy of Sciences. I had been in contact with them for so long. But I may never see them again, so I miss them very much.

I would like to thank all speakers and participants. The list of their names is found at the following website:

<JSPS website> [https://www.jsps.go.jp/english/e-jagfos/2019\\_02.html](https://www.jsps.go.jp/english/e-jagfos/2019_02.html)

I remember their enthusiastic performance in well-produced presentations, shining eyes seen during the heated discussion, fearless looks when putting questions filled with curiosity and inspiring poster presentations. Moreover, having lodged together for three nights and four days, I still remember each of them through their facial expressions. Some were gentle, others were funny, relaxed, kind or energetic. Communicating with top-notch overseas researchers was really a precious experience. Meeting with the Japanese leading researchers also became an invaluable asset to me. It is amazing that such awesome people are around me!

Again, my sincere thanks goes to Drs. Scott Kominers and Sanaz Mostaghim. They were humane, nice and cool. The symposium became vibrant thanks to their leadership under which all participants were warmly welcomed to join.



Co-Chairs

Lastly, I would like to thank all Japanese PGMs who worked together to organize the sessions: Drs. Akiko Hayashi-Takagi, Itaru Osaka, Shohei Nobuhara, Keiko Takase and Hisaki Kono. Unlike the past Co-Chairs, I was not legendary and charismatic. I didn't assume authority or leadership. Yet, they worked very hard to design great sessions without any assistance from me. I deeply admire their enthusiasm. I was so lucky to attend the FoS symposium with them, share the exciting moment and have candid conversation.

After participating in the FoS symposium, science becomes refreshingly interesting to me again. Communicating with very positive and energetic people who explored the frontiers made positive impact on me. I was encouraged to think about starting new research. Overall, getting to know such fascinating people has been my priceless wealth. I heartily recommend the readers of this report, who get interested in attending the FoS symposium, to make time to join. That will be worth it!



Group photo