Report of the 10th Japanese-German Frontiers of Science (JGFoS) Symposium

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The 10th Japanese-German Frontiers of Science (JGFoS) symposium was held for 4 days from October 31 through November 3, 2013 in Kyoto, where the autumn leaves were just beginning to turn red. This was the third JGFoS for me to attend. I rushed to the venue by bicycle from my university, excited to be the PGM Co-Chair and recalling the fresh sensation I felt the first time I had participated in a FoS symposium. The venue, Kyoto Brighton Hotel, is located in a very quiet place next to the Kyoto Imperial Palace. This was the first time for a JGFoS to be held outside the Tokyo Metropolitan Area. I think being away from Tokyo is actually nicer for understanding not only Japanese culture but also for getting a feel for the German participants' culture as well. (Actually, Kyoto was chosen as the venue not because I live there but because of the enthusiastic efforts of the previous PGMs and JSPS staffs.) Now, I'll be happy to walk you through a step by step description of this JGFoS symposium.

- Thursday, October 31: Day 0

The Japanese and German PGMs and the speakers met for the first time at the Session Coordination Meeting. It was also an important day as the session order would be decided and announced. (The participants do not know the order of the sessions until they arrival at the venue.) When the meeting is held in Japan, it sometimes happens that a number of the German participants cannot get to the venue on time due to their travel schedules. This time, an introductory speaker hadn't arrived yet in my session (Physics/Astrophysics). The attending members of our group were a bit nervous when we started introducing ourselves to each other, confirming the presentation files, and discussing the proposal contents.

After that, we had a welcome dinner reception which brought all the participants including the old and new PGMs together. Breaking the ice, we had a good discussions in preparation for the next day's start of the symposium. JSPS arranged special surprise in which Dr. Stefan Boeschen, the German PGM Co-Chair, and I cut a cake specially prepared to celebrate the 10th anniversary of the JGFoS symposium. This became a nice memento of the occasion for me.

Apart from the program, a "Smart Energy Demonstration House Tour" had been planned by Professors Ukita and Kawashima that afternoon. Ten people joined it. During the demonstration, unexpected system hang-up occurred. Not to be hampered, the teaching staff and students of Kyoto

University's Graduate School of Informatics made up for it by giving us an enthusiastic briefing, making the tour very interesting.

- Friday, November 1: Day 1

The day started with PGM Co-Chairs Dr. Boeschen and me delivering welcome addresses at the Opening Ceremony. We emphasized that JGFoS provides an experience that everyone can enjoy together. Then, I went on to say: As it is curiosity that drives scientists, it is a wonderful experience to meet new people, encounter novel things, and be intellectually stimulated by them. A JGFoS symposium brings together gifted young researchers from differing disciplines; they each present the latest research in their fields, then engage each other in discussions. Replete with components geared to pique the participants' curiosity, JGFoS symposiums are exciting events. Rather than discussing topics that are familiar to all, these symposiums give the participants a chance to hear ideas that are brand new to them and to ask simple and innocent questions, sparking discussions along yet-untrodden paths.

1st Session: Mathematics/Informatics/Engineering, "Energy meets informatics: Smart electric-power management"

The group in this session planned and conducted the above-mentioned tour of the smart-energy house the day before. Electric power is a high-profile issue in Japanese society as most of the nuclear power plants across the nation were shut down after the unprecedented earthquake and tsunami in 2011. In Germany, on the other hand, a massive shift to renewable energy is driving up energy bills. Accordingly, this session drew the rapt attention of the participants from both countries. The PGMs and speakers addressed the topic from the perspective of developing smart systems that respond to the needs of society. Some members of the audience, however, raised questions about privacy concerns and expressed fears that such systems might allow them to be spied upon without them knowing it. This kind of Q&A session is a unique feature of FoS symposiums; it gives specialists from a wide range of disciplines, such as engineers, scientists, and humanities researchers, a platform to freely express and mix their views, providing a matrix for new concepts and values.

2nd Session: Chemistry/Material Session, "Imaging molecular motion"

This session married chemistry with biology, a subject which a broad segment of the audience found fascinating. The discussion came to a boil when one presenter spoke about the performance of

molecular motors, saying that they operate at 100% efficiency. This in contrast to what was argued to be "common sense" in physics that nothing achieves total 100% efficiency. JGFoS symposiums allow plenty of time for discussions like this to run their course. In this session, the initial questions were mostly broached by the German participants, with the Japanese participants starting slow but picking up the pace as the Q&A discussion gained momentum.

Next, each participant was allotted three minutes to give a "flesh poster talk," followed by a more comprehensive poster session. The success of these first day activities offered a good omen for the rest of the symposium. After dinner, some of the participants enjoyed a night session in the hotel lounge.

- Saturday, November 2: Day 2

A cultural tour was planned for the afternoon, so the morning schedule was a bit tight as it contained two sessions starting from 8:30.

1st Session: Earth Science/Geosciences/Environment, "Aerosols, sources, depositions and impacts"

This session delved into the latest topics related to global warming. Exploring the question "how clouds generated by aerosols affect climate," the discussion approached climate change from an indirect angle, making it difficult to advance it quantitatively. As it evolved, the discussion intersected with physics such as the relationship of cosmic-ray generated clouds and solar activity to climate change. It unfolded into another very interesting session.

2nd Session: Social Sciences, "Management of uncertainty—dynamics of change and problems of control"

The main topic of this session was how people handle uncertainties in their everyday lives (or throughout their life). Trouble had with playing a video during the presentation gave the session itself a touch of "uncertainty." This boosted the voltage of audience excitement for the subject. The mixing of a Social Science session into its program differentiates JGFoS symposiums from conventional conferences. This is seen in the discussions where researchers in the humanities and social sciences express views on science and society from different perspectives than researchers in the natural sciences, prompting efforts to create synergisms. Another "unique" aspect of this Social Science session was the more numerous participation of female researchers.

In the afternoon, we set off on the cultural tour, which had as its first stop the Nanzenji temple where we enjoyed an excellent lunch of boiled tofu, a local dish of Kyoto. Then, we visited the stilted Kiyomizu temple, which from a sightseeing perspective is call the "Face of Kyoto." Lastly, we experienced Kyoto's traditional kimono-dyeing art of *kyo yuzen*. The tour, which was enjoyed by all, provided a welcome respite from a bit of the doldrums on this third consecutive day of being cooped up in the hotel. Refreshing everybody in both mind and spirit, the tour had the side effect of loosening up the discussion and interaction between the Japanese and German participants.

A new "Get-Together-Drink" component was added to this year's symposium. This was a special poster presentation event held over wine after the tour. Enjoying the cozy atmosphere, everyone talked to their heart's content.

The day ended with a JGFoS reunion held after dinner, held separately from the program. Dr. Wakamiya, a PGM Co-Chair in last year's JGFoS symposium, and Dr. Onuma, one of its participants, joined us at the Kyoto Brighton Hotel, livening up a second after-dinner party.

- Sunday, November 3: Day 3

1st Session: Biology/Life Science, "The Pandemic"
2nd Session: Physics/Astrophysics, "Physics of the Sun," which I chaired.

By this time, all the participants including speakers felt completely relaxed, having adjusted to the JGFoS environment. Valuing the little time remaining, they asked and answered volleys of questions in these sessions.

In the session on "The Pandemic," the complexity of factors causing a widening spread of influenza strains over recent years was explored and discussed. In the Q&A period of the "Physics of the Sun" session, the uniqueness of our sun was discussed. A probing question asked about whether solar research is more about the Earth than it is the sun sparked a debate. A picture was shown of what the Earth will look like in the future after the human species has gone extinct. The discussion became animated when someone asked who drew it and by tapping into what source of knowledge.

Now high on the exciting JGFoS atmosphere and cherishing the little time left, the participants exchanged words of farewell with the many new friends they had made over the course of the

symposium. After the two sessions, next year's PGMs attended a PGM meeting to decide on the session topics for the 11th JGFoS symposium. Meanwhile, everybody else relaxed and attended the farewell dinner. After it, I invited the PGMs and speakers in my physics session to the hotel lounge and enjoyed a pleasant conversation with them. Looking around, I saw many participants lingering in the lounge as if reluctant to believe that the event had come to an end.

Indeed, the 10th JGFoS symposium had culminated in a great success thanks to all involved, including the experienced PGMs, fabulous speakers, highly engaged participants, excellent staffs of JSPS and AvH, great professors on the FoS Symposium Advisory Board, and TOPTOUR, the symposium's dedicated travel agency. I wish to thank Dr. Ukita, Dr. Ueno, Dr. Horikawa, Dr. Yamanaka, and Dr. Yoshimura for making this JGFoS symposium a not only a fulfilling but very exciting event. With this a superb lineup, the symposium went smoothly in a manner that prompted the participants to sparkle and shine, each in his or her own special way.

Though a number of FoS Advisory Board members and PGMs have already reported on the excellence of the FoS program, I dare to add my own version to the end of this report.

1. The more specialized a researcher becomes the fewer opportunities s/he has to discuss scientific topics with researchers of other fields. Needless to say, researchers of different stripes do have regular opportunities to talk with each other about such matters as university management, educational programs, and societal issues. What's attractive about the FoS program is that it gives us the opportunity to go back to where we started as scientists, engaging in curiosity-driven conversations on scientific topics with people of various fields. I would like to see many more scientists take advantage of this opportunity to revisit that starting point and from it, create new ideas and values to use in tackling ever-greater challenges. Though I am a researcher in basic science, I am strongly motivated to seek out the commonalities I share with researchers in the humanities and engineering sciences. Aside from that, I derive pure enjoyment over going back to starters in discussing science.

2. I would like to mention another wonderful thing about the FoS program: it is the process of organizing FoS symposiums together with the JSPS staffs. Normally, there is a split between JSPS staffs and researchers, one being the provider and the other the recipient of grants. This provides little chance for us to work together. However, in planning and hosting FoS symposiums, we do work together in a mutual effort to make each of them highly successful. The program gives us an unusual chance to meet and discuss matters of cutting-edge science and Japan's scientific research posture. I

believe this gives FoS symposiums another meaningful dimension for both the JSPS staffs and the researchers working in universities and research institutes. Through my experience in this FoS symposium, I have been deeply impressed with the ability of JSPS staffs, who provide behind-the-scenes support for programs across the full spectrum of Japan's scientific community. I am very grateful for the efforts of Ms. Yukiko Abe, Head of JSPS's Research Cooperation Division, Ms. Satoko Tada, Section Chief for FoS Symposiums, Ms. Mai Sugawa, Ms. Akiko Fujita, and the other members of the FoS team.

The superb successful of this symposium owes to many dedicated people who put such great time and effort into carrying it out. On behalf of all the PGMs, I extend our gratitude also to Ms. Hiroko Takuma, former Head of JSPS's Research Cooperation Division, who transferred to MEXT handing the baton to Ms. Abe, for taking the initiative in selecting Kyoto as the venue for this symposium and for the work she did in preparation for it.

Lastly, I give a cheerleader's shout to Dr. Ukita and the other new PGMs who have taken rudder in guiding the 11th JGFoS symposium. With their efforts, I look forward to the further progress of the FoS program, which contributes in such a meaningful way to the multidisciplinary advancement of science in Japan.