

Science and Technology in Japan 2017 Program Report

School of Science and Technology (SST) carried out Short Term Program “Science and Technology in Japan (STJ)” from 4th to 13th of July. This program is designed especially for Science/Engineering undergraduate students of the second grade or higher and exclusively open to Meiji University’s oversea partner institutions. The maximum acceptable number of the students was limited to be ten. Two students made applications and both participated.

The objectives of this program are to study industry and culture in Japan, the biggest economic and technical center in Far East, and to achieve participants’ better understanding. It will greatly strengthen the technical ability of the science/engineering students who hope to play an important role in the global society to deepen the understanding over the society, industry, and the underlying culture in Japan, which has different philosophy and is widely recognized to be difficult to understand. Not only lectures but also field trips are included in the program, where participants can visit related companies and institutions to hear friendly voice from the employees. STJ2017 mainly focused on fields of electrical engineering, mechanical engineering, applied chemistry, and information technology with studies of Japanese language and culture as well.

The lectures were mainly conducted by full-time faculties in SST. The very first lecture “Introduction to Japanese language and culture” was given from Senior Assistant Prof. Yohei Yamamoto, General and Cultural Studies. (Photo 1) Undergraduate and graduate students of School of Science and Technology also attended the lecture. Each student’s self-introduction and introduction of their birthplaces were followed by study of Japanese language and culture.



(Photo1)

Following this important introduction, five professors, Senior Assistant Prof. Hajime Wagata from Department of Applied Chemistry (photo2), Senior Assistant Prof. Shachiko Ishida from Department of Mechanical Engineering and Associate Prof. Masato Inoue from Department of Mechanical Engineering Informatics (photo3-4), Prof. Teruhisa Kumano from Department of Electronics and Bioinformatics (photo5), and Prof. Hisao Tamaki from Department of Computer Science (photo6), gave lectures on various fields of science and technology in Japan. More precisely, hydrogen energy using photo catalyst, design and manufacturing system in steel industry, mathematical design based on origami engineering and its practical applications, electric power system, and software production were main themes and the advanced Japanese technology in these regions were explained clearly and plainly. These lectures were given in combination with

related field trips done after the lectures, which fostered participants' better understanding. Furthermore, Prof. Teruhisa Kumano gave guidance on the longer term study and job hunting in Japan entitled as "Study in Japan/Meiji" and "Work in Japan".



(photo2)



(photo3)



(photo4)



(photo5)



(photo6)

Following is a list of companies and institutions which participants visited from Day 3.

- * The University of Tokyo: is doing top-runner research in Japan, the leading institution in the field of photo catalysts. The participants took a close look at relating experimental equipment.
- * JFE STEEL: steel production lines were closely observed. Discussion with the Japanese students deepened understanding and gave a strong impression on the participants concerning culture and society.
- * TOSHIBA FUCHU COMPLEX: The process controllers and computers which determine the action of existing power systems and also the hydrogen storage system, the key tech for next generation smart grid, were very interesting.
- * FIXSTARS: High speed computing can be realized only when expertise both in the computer architecture and algorithm design, is organically integrated. One of the best examples of this integration could be found in FIXSTARS. The optimization and parallelization are such technical issues.

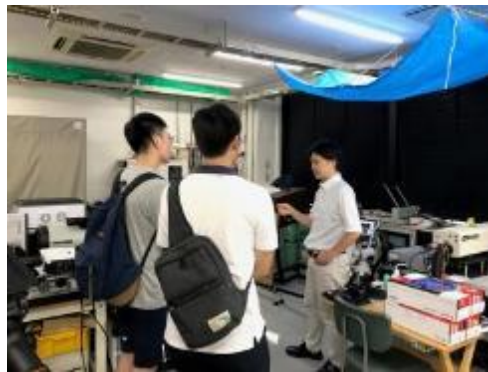
In the afternoon of Day 2, campus tour was done by departments including those which did not have lectures during the program. Prof. Shigetoshi Yazaki, Department of Mathematics, showed the crystal

separation from the super cooled water, followed by kind explanation how we can understand the true physical phenomenon via numerical simulation which cannot be treated by purely mathematical methods (photo7). Senior Assistant Prof. Hidehiko Suzuki showed very interesting systems including Doppler Lidar (distance and speed measurement using light remote sensing) and the real movie of aurora taken from the Antarctica (photo8). Doctoral student of Department of Electronics and Bioinformatics, Mr. Hiroharu Kamada made an impressive presentation including Meissner effect experiment, in which high temperature superconducting bulk cooled by Liquid Nitrogen realized the levitation and free rotation of the permanent magnet, which maintained its position even when the horizontal and vertical mechanical force was applied by the students (photo9). Prof. Hisahiro Hiraishi, Prof. Tomoaki Tanaka and Associate Prof. Hiroyuki Sasaki gave kind and detailed explanation on the structural engineering test bed and design studio (photo10). Prof. Yoji Kuroda, Department of Mechanical Engineering, gave demonstration of autonomous mobile robots (photo11).

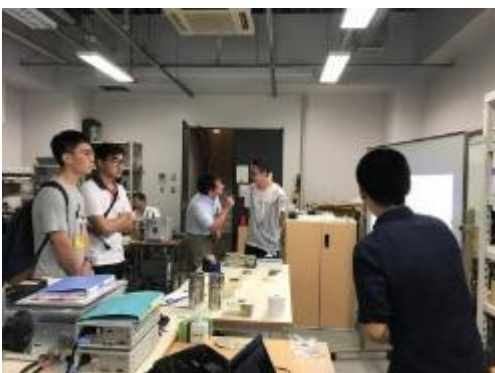
After this campus tour, a welcome party was held. Together with the farewell party held in the evening of Day 7, it became a good occasion for students to have active exchanges with academic head of School of Science and Technology, members of Committee for SST International Collaboration and other host professors and students. (Photo 12).



(photo7)



(photo8)



(photo9)



(photo10)



(photo11)



(photo12)

In order to enhance the efficiency of the study, so called active learning classes were also adopted, which were discussions between the participants and professors. The final presentation (Photo 13) was so successful that I myself learned a lot from the participants' opinion on what kind of trap Japanese industry will likely have in near future. They are also known as the strong points for Japan (for example Lifetime Employment System and Positive Evaluation of High Quality of Japanese Brand).



Last but not least, we would like to express our sincere appreciation towards the visited companies, institutions, and all faculties and staffs involved in this program for their kind understanding and cooperation.

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