§7. US-Japan Workshop on Fusion Science Archives

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US-Japan workshop on Fusion Science Archives was held for the first time reflecting the fact that the US-Japan collaboration on the fusion science has played an important role on the development of nuclear fusion research in both countries and the internationalization of fusion science archives is to be commenced. The purpose of the workshop was for the participants to know the status of the activities each other, to know the difference in the circumstance on fusion science archives surrounding both countries, and to discuss the future direction. The topics were focused on the history before the Agreement between Japan and USA on Cooperation in Research and Development in Energy and Related Fields in 1979. The workshop consists of two parts: the former was on Dec. 12 -13 2005 in UCLA as a usual workshop and the latter on Dec. 15 -16 in PPPL to conduct interviews to two prominent scientists, Dr. Young Kenneth and Dr. Yoshikawa Shoichi, and to inspect archival activities in detail in PPPL and in Princeton University. UCLA has a plenty of scientists who specialize in archives as shown below and has a strong relation with Sokendai on this research field. Here, the workshop conducted in UCLA is primarily introduced.

Japanese participants are those shown as the authors of this report. Those from the US are as follows: Prof. Abdou M. (UCLA), Prof. Traweek S. (UCLA), Prof. Emeritsu Chen F. F., Prof. Emeritus Fowler T. K., Prof. Meldrum M. (UCLA), Prof. Tamano T. (Formerly Univ. of Tsukuba and GA), Dr. Popescu A. (PPPL) et al.

Contents of presentations by Namba, C. Fujita J., Obayashi H., Kimura K. are described in this annual report. Dr. Abe N. introduced that Sokendai is composed of 18 Inter-University Research Institutes (IURI) and that archives are one of Sokendai's research projects. He explained the status of archives network of which final goal is to connect 18 IURIs on the basis of EAD and showed the NIFS digital finding aid as an example. Prof. Mizuuchi T. presented the history of experimental devices that originated in the Helicon project and succeeded by the Heliotrons for plasma confinement and presented photos showing that the devices are exhibited in good conditions.

Prof. Traweek S. expressed her opinion that the physics in the 20th century has shown a big change from at least four points of view; 1) how the research has been conducted, 2) how the budget has been allocated, 3) where the research has been done, 4) who has done the research. The bilateral collaboration on nuclear fusion research should be a good example for us to investigate the change. However, it was pointed out that the documents registered are not many, so it is important to promote the archival activities for leaving on record the role played by the collaboration.

Prof. Emeritus Fowler T. K. talked about the history of plasma confinement as follows. In 1950s a variety of magnetic field configurations, e.g. mirrors, pinches, stellarators, were invented, however those suffered from instabilities, end losses, and complexity, respectively. In 1960s the energy principle that is a guiding principle for MHD stabilities was established, and the ideas of magnetic well and magnetic shear were verified to be effective theoretically and experimentally. While stellarators suffered from the Bohm diffusion, this was not the case for tokamaks. The era of tokamaks came in 1970s due to the epoch-making results in T-3, and C-Stellarator was converted to ST tokamak. In PLT the high ion temperature of 7 keV was achieved that was also an epoch-making result. Then three big tokamaks were constructed in US, in Europe and in Japan, which leads to ITER. Besides of tokamaks, he talked about the revival of stellarators, the advent of spheromak, and inertial fusion. Contributions of fusion sciences to natural sciences, for example, self-organization, application to astronomy, computer modeling, were introduced. Finally the attractive aspects of fusion energy were explained.

Prof. Emeritus Chen F. F. talked about the early phase of the Matterhorn Project in PPL including the staff, the students, and the status of researches in 1950s. A lot of photos on the so-called 2nd Geneva Conference in 1958 were impressive; the machines from USA, UK, and USSR, were reconstructed in the exhibition area of the conference hall and the researches were declassified.

Prof. Tamano T. talked about the US-Joint Safety Review Activities and history of fusion experimental devices primarily in GA (DC-Octopole, Doublets, OHTE) and in Univ. of Tsukuba (GAMMA 10).

Prof. Meldrum M. introduced on-going oral histories, for example, AIP activities including the interview to Prof Koshiba M., activities in the space division of National Air and Space Museum, and History of Pain Collection in UCLA. She also explained the methodology and opening to the public of oral histories.

Dr. Popescu A. introduced the status of digitalization of MATT reports, Technical Memos, and PPPL reports.

It was pointed out by the participants that the archival activities on the fusion science in both countries still need more efforts including the activity of public relations.