

§6. The Chronology on the International Exchange of Nuclear Fusion Study

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1. Background and purpose of the research.

Tomio Ariyasu of welding technology group of Osaka University attended the workshops on astrophysics at the Yukawa Institute for Theoretical Physics (Kiken) of Kyoto University in February and October of 1955. In the second workshop nuclear fusion on the Earth was discussed. He was interested in the nuclear fusion and participated in the Workshop on Ultra-High Temperature held in the Kiken in April of 1956. Ariyasu told the topics on ultra-high temperature to Minoru Okada (Welding Engineering Department, Osaka University) and Kōdō Husimi (Physics Department, Osaka University) with the help of Seikan Ishigai (Mechanical Engineering Department, Osaka University). Then in June of 1956 at Osaka University an open experiment of the high current discharge was carried out and the first nation-wide research group, the Handai Cho-koon Kenkyukai (Research Group of Ultra-High Temperature (Osaka University)) was organized. This was the first experiment with the aim of the nuclear fusion in Japan.

The Kiken Cho-Koon Kenkyukai was planned by Satio Hayakawa and Mitsuo Taketani. Hayakawa heard the Matterhorn Project of United States in the conference held in Mexico in 1955, and planned the Kiken Cho-Koon Kenkyukai after his homecoming. In Nagoya University, Kenzo Yamamoto had started the research of high-temperature plasma as a discharge phenomenon. The researchers of various fields had started research related to the nuclear fusion in Japan.

The Japanese Atomic Energy Commission (JAEC) organized the Kakuyugo Hannou Kondankai (the Assembly for Nuclear Fusion Reactions) in February 1957. Besides the background of this governmental movement, the Kakuyugo-Kondankai (Nuclear Fusion Research Group) of the researcher-initiated nation-wide organization was established in 1958. Nuclear Fusion Research Group published the transaction of the forum *Kakuyugo-Kenkyu* (*Nuclear fusion Research*) in July 1958, and the editorial office was placed at Nihon University. Literatures on the

nuclear fusion issued in foreign countries were collected by the editorial office. The research trend and the Japanese translation of papers were reported in *Nuclear Fusion Research*. It was the start of the international exchange to obtain the research information from foreign countries.

Kanji Honda of The University of Tokyo reported at the Kakuyugo-Kondankai meeting the researches on the ultrahigh-temperature plasma presented in the third international electric discharge conference held in Venice in 1957. The United Nations' Second International Conference on Peaceful Uses of Nuclear Energy was held in 1958, and information on the peaceful use of nuclear fusion was opened to the public. Goro Miyamoto of The University of Tokyo who attended the conference proposed the two projects of A and B in the Kakuyugo Senmonbukai (Special Panel on Nuclear Fusion Research (the First Stage Special Panel)) of JAEC in 1958. Shoichi Yoshikawa (PPPL) and Tihiro Ohkawa (GA), who were active fusion scientists abroad, reported the research trend of foreign countries in the Kakuyugokaigi (the Nuclear Fusion Council) of JAEC.

The historical investigation of the nuclear fusion had been carried out. However, the international exchange of nuclear fusion was not examined. It was our purpose to investigate the international exchange of nuclear fusion and to make the chronology.

2. Content and result of the research

Nuclear fusion research in Japan was discussed separately in different committees under the Ministry of Education, Science and Culture (MOE) and the Science and Technology Agency (STA). In each sectors, the international exchange has separately been carried out.

In this study, we examined international exchange of JAEC. We investigated the proceeding of the Kakuyugo Senmonbukai, the Kakuyugo Kenkyu Un-ei Kaigi (the Nuclear Fusion Research Management Council), and the Nuclear Fusion Council of JAEC, and made the chronology.

3. Material location and future planning

The proceeding of the Kakuyugo Senmonbukai, the Kakuyugo Kenkyu Un-ei Kaigi, and the Kakuyugokaigi has been arranged and preserved by Kenzo Yamamoto. The materials of the international exchange of JAEC preserved by Sigeru Mori were transferred in the Naka Fusion Institute of Japan Atomic Energy Agency (JAEA). As future planning, we want to investigate the materials of the international exchange stored in NIFS and to make the synthetic chronology.