Introduction to the Symposium

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The "International Symposium of Radiometric Dating Studies – Frontier of Technical Developments and Applications of CHIME and AMS ^{14}C Dating Methods –" was held on January 15-17, 2007 at the Center for Chronological Research, Nagoya University, in Nagoya, Japan. Totally 20 oral and 12 poster presentations were given by foreign and Japanese participants. This symposium aimed to summarize the present status of both CHIME and AMS ^{14}C dating methods and to survey prospective frontiers of both technical and application developments.

Both CHIME U-Th-Pb and AMS ^{14}C dating methods have been intensively investigated for more than 25 years at Nagoya University, and the technical studies as well as applications of the methods have been accelerated since the establishment of our research facility, the Center for Chronological Research (CCR), since 2000. At present, both dating methods are inevitable for chronological researches on the history of earth's environment and human developments.

The origin of our center goes back to the introduction of the AMS system, a newly developed system for radiocarbon dating, in 1981-82, at the Radioisotope Center of Nagoya University, through the hard and heavy negotiation works done by emeritus professor Nobuyuki Nakai of the department of Earth and Planetary Sciences. That system is a Tandetron AMS machine manufactured by General Ionex Corporation, and that machine is a brother machine of those introduced to both AMS facilities in Arizona University and Toronto University at the same period. The leaders of both facilities are participating in this meeting. In 1996-97, we have successfully introduced another new high-quality AMS system manufactured by High Voltage Engineering Europe, the Netherlands, and by using this AMS machine, we measure radiocarbon ages of historic samples which require high accuracy, to be compared with accurate historical dates of the samples.

During the history in the past 26 years, the Dating and Materials Research Center was established in 1990, and presently the Center for the Chronological Research was organized succeeding the previous center in 2000.

In addition to studies on younger samples, age determination of earth's history has been studied by many researchers of the Department of Earth and Planetary Sciences, Faculty of Science, Nagoya University, since its establishment in 1949. Among them, the CHIME dating method, which measures and utilizes the abundance of uranium, thorium, and lead elements in the minerals of rock samples, was firstly established by Professor Kazuhiro Suzuki at around late 1980s, and has been used to date huge number of foreign samples, as well as Japanese samples. The remarkable achievements so far established were presented at this Conference.

Returning to radiocarbon dating, this method uses carbon that is one of the most common elements forming organic matters. Therefore, very huge variety materials can be dated by this method. Among them, Nagoya AMS group is recently focusing on historical samples, the wall paintings in the caves of Bamyan in Afganistan, the caves of Mogao Grottoes at Dunhuang in China, pottery samples in Jomon, Yayoi, and Kofun periods, relics of historic persons, and so on, in collaboration with National Institute of Japanese History, Tokyo Institute for Cultural Properties, Nara Institute for Cultural Properties, Ikuo Hirayama Museum of Art, Aichi Prefectural Archeology Center, Nagoya University Museum, and so on. The remarkable establishments were also presented at this Conference.

Finally, I emphasize again that the most important aim of this symposium is to find the seeds for future studies and future developments. This symposium was open to public, and we wanted to show our achievements to the audience. But, at the same time, we, researchers, wanted to catch, find and discuss the seeds for future developments in the filed of radiometric dating studies. I really hope all our aims are successfully achieved at this meeting.