

PREFACE

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The International Conference on Tritium Science and Technology has an approximately 30-year history starting with the American Nuclear Society national topical meeting Tritium Technology in Fission, Fusion and Isotopic Applications held in 1980 in Dayton, Ohio. Since then it has been held eight times: Dayton, Ohio (1985); Toronto, Canada (1988); Albuquerque, New Mexico (1991); Belgirate, Italy (1995); Tsukuba, Japan (2001); Baden-Baden, Germany (2004); Rochester, New York (2007); and Nara, Japan (2010). The last, TRITIUM 2010, was held at Nara, the oldest ancient capital in Japan, and was the eighth in the series and the first one after starting construction of ITER. Tritium 2010 was attended by about 300 participants from 19 countries. They were welcomed by Japanese deer at the conference site and attended various events celebrating the 1300th anniversary of Nara Heijo-kyo Capital.

TRITIUM 2010 continued the long tradition of the conference series of covering a wide range of topics and providing a forum for exchanging information on tritium science, technology, and engineering, as well as general experience in safe tritium handling for fusion, fission, pharmaceutical, and other isotopic applications. At Tritium 2010, 266 papers (23 plenary and invited papers, 28 oral presentations, and 215 poster presentations) were presented, which is the largest number among the series of Tritium conferences, and 169 papers are published in this proceedings as a special issue of *Fusion Science and Technology*. The vast majority of the papers addressed fusion-related research and development activities, many of which were directly related to International Tokamak Experimental Reactor (ITER) and National Ignition Facility (NIF), and a special session for discussing ITER-related issues was held. In ITER, we will have to handle a greater amount of tritium than we have ever experienced, so basic research on tritium is very important. Therefore, promoting and/or encouraging basic research on tritium science and technology was another target of the Tritium 2010. Fortunately, a large number of studies were devoted to issues such as environment, safety, biology, chemistry, physics, and other fundamental research necessary for future usage of massive tritium and its applications.

Promoting young researchers was also emphasized. Fusion research will continue 30 years or more into the

future, training young researchers is very important. In order to promote such research, best poster awards were given to six young researchers who made excellent poster presentations. They are Dr. G. A. Morgan, Jr. (Savannah River National Laboratory, United States), Ms. Makiko Saito (University of Toyama, Japan), Mr. I. D. Maksimkin (RFNC-All-Russian Research Institute of Experimental Physics, Russia), Mr. Yuki Edao (Kyushu University, Japan), Mr. Shoji Takashima (Kyushu University, Japan), and Dr. Yong Song (Chinese Academy of Science, China). Tutorial lectures on tritium science and engineering for young scientists and students were held after the closing of the conference.

Along with the conference, there were memorable excursions to Horyuji temple, the oldest temple in Japan, and various private events before, during, and after the conference at Nara. Within walking distance from the conference site, the Nara Prefectural New Public Hall, there are many historical shrines and temples containing national treasures, such as Kofukuji Temple, Todaiji Temple, Kasuga Shrine, and Nara National Museum. On their way to the conference site, many participants passed through Nara Park to say “good morning” to deer. Also not to be forgotten were Old Japanese court dance with music played with Japanese traditional musical instruments and musical performances by Wadaiko, Japanese drams, and Shakuhachi, a Japanese bamboo flute.

Special thanks are given to the local organizing committee members for their efforts in organizing the conference, the program committee members for compiling the technical program, and the publication committee members for editing and final formatting the papers to publish this proceedings. We are also grateful to all those people who contributed to the manuscript review process. Without their support, the quality and speed of publishing the proceedings would not have been possible. Finally, we wish to give special thanks to NIFS, the director, Prof. A. Komori, and the vice director, Prof. O. Kaneko, who fully supported the conference. The next conference in this series will be held in the fall of 2013 at Nice, France, sponsored by Euratom-CEA.