

PREFACE

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The operation of JAERI Fusion Torus-2M (JFT-2M) was completed in March 2004 after 21 years of operation. We are pleased to publish the review of the JFT-2M results in this special issue of *Fusion Science and Technology* at this time. We believe that the JFT-2M innovative research will contribute to the large tokamaks, ITER, and a future demonstration reactor and that this review of the results is important and timely for fusion research and development.

At the end of the 1970s, JFT-2 was running, construction on JT-60 had just started, and the design of INTOR and FER (the Fusion Experimental Reactor designed by JAERI at that time) was conducted. At the same time, JAERI had a program to improve tokamak performance with a noncircular plasma cross section. In such circumstances, the JFT-2M project started in 1978 in order to provide data for large tokamaks and to test innovative techniques or novel trials flexibly. Therefore, the JFT-2M device was designed to have mobility and flexibility while utilizing as much of the equipment and facilities of JFT-2 as possible. After 2 years of construction, the first plasma of JFT-2M was achieved on April 27, 1983.

JFT-2M has produced many significant results on H-mode research, advanced plasma controls, optimization of the divertor concept, and advanced fueling by introducing innovative ideas and advanced technologies. In recent years, JFT-2M has carried out the Advanced Material Tokamak EXperiment (AMTEX) program in order to test the compatibility of low-activation ferritic steel with high-confinement plasmas. The success of the JFT-2M project was due to the contribution and collaboration of the JFT-2M Group members. We would like to express our appreciation for the great contributions made by our domestic and international colleagues. In addition, we would like to acknowledge the late Dr. H. Maeda and Dr. N. Suzuki, who were leaders of the JFT-2M project for a long time.

JFT-2M was operated parallel to JT-60 so that it played an important role as a satellite tokamak. We believe that the success of the JFT-2M project showed the importance of satellite tokamaks, as well as major tokamaks. We think this suggestion is profound even in the ITER era because the present situation is similar to the starting phase of JFT-2M. Construction of ITER will be started soon. Superconducting medium-sized tokamaks are being constructed now, and the modification of JT-60 to the superconducting machine is planned. These tokamaks will play the role of satellite tokamaks for ITER. With this in mind, we hope this special issue on JFT-2M not only will help fusion research but also will help in the understanding of the research method of satellite tokamaks, resulting in the success of ITER.

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