

Preface

The 20th International Toki Conference on “The Next Twenty Years in Plasma and Fusion Science” was held in Toki through 7-10 December 2010, organized by the National Institute for Fusion Science (NIFS), National Institutes of Natural Sciences. This was the twentieth meeting of a series that originated in 1989, when the National Institute for Fusion Science was established. The programme covered a wide range of research, including simulation science, nuclear fusion research and fusion engineering. The topics selected for the conference were as follows:

1. Prospects for the Next Twenty Years in Plasma and Fusion Science
2. The Leading Edge of Simulation Science: Multi-Scale Simulation, Large Scale Simulation, Integrated Simulation Codes, High Performance Computing, Simulation Technique
3. Imaging Science: Scientific Visualization, Virtual Reality, Diagnostic Imaging
4. Magnetically-Confined Fusion Plasmas: Confinement, Stability, Wave-Plasma Interaction, Heating & Current Drive, Diagnostics, Steady State, Divertor & SOL
5. Inertial Fusion Energy: Central Ignition, Fast Ignition, High Energy Density Physics, Warm Dense Matter
6. Fusion Engineering and Fusion Reactor Concepts: Materials, Reactor Design, Fusion Technologies
7. Space and Astrophysical Plasmas: Sun, Magnetosphere, Jets, Accretion Disks, Substorms
8. Basic Plasma Research and Plasma Application

This special issue of Plasma and Fusion Research (PFR) contains 119 selected papers among 46 oral papers (plenary, special, invited, contributed oral and summary papers) presented in sessions devoted to the topics above and 201 contributed papers in poster sessions. These papers have been accepted for publication after being peer-reviewed according to the standards of the PFR. The editors and the guest editors of this special issue of PFR were as follows:

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In the course of the editing process, a huge earthquake and tsunami struck Japan on March 11, 2011. Because of the disasters and the succeeding nuclear plant accidents in Fukushima, some authors, reviewers and editors of this special issue were put in a great confusion. We would like to express our heartfelt condolences to the victims of the disasters, and sincere thanks to those who collaborated on the publication of this special issue in spite of the difficult situation.

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Hideaki Miura
Chairperson of Guest Editor
Toki, 7 December 2011