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Preface

The 15th International Conference on *Plasma–Surface Interactions in Controlled Fusion Devices* (PSI-15) was held in Gifu, Japan from 26th May to 31st May, 2002. It was organized by the National Institute for Fusion Science (NIFS), Toki, Japan following the PSI-14 (2000) meeting in Rosenheim, Germany, in a series which started at Argonne National Laboratory, USA, in 1974.

The PSI conference is the largest in a broad field of research covering fundamental and applied surface physics and plasma science. The attendance of the conference was 308 in total, 126 from inside Japan and 182 from 19 countries outside Japan. Around 230 poster papers were presented together with 33 oral contributed papers, 18 invited papers and 5 review papers. All papers appearing in these proceedings were refereed by at least two independent peer reviewers applying the customary rigorous review standards of the *Journal of Nuclear Materials*.

Magnetic fusion research has reached a level where intensive DT burning plasma experiments can be designed as the next step, for example the ITER project. Another important target is to achieve steady state operations, the capability for which is now being developed in tokamak and helical configurations. During its nearly 30 year history this series of PSI conferences has made many significant contributions to the progress of fusion research. Clarification of the long term issues of PSI for ITER and beyond the next step has become increasingly more important in order to define the direction of the studies which will lead us to the ultimate goal of an operating fusion reactor. To that end, long term issues were reviewed and discussed in this conference. In addition to the many advances in magnetic fusion research, progress in inertial fusion research has recently attracted attention to reactor design for this scheme. The first lecture related to PSI issues in inertial fusion reactors was presented in this conference. Coincidentally, on the last day of the conference, the Japanese government announced its official decision to participate in the ITER project, and proposed to invite the ITER site to Japan. Four official proposals for the ITER site have since been completed, representing a very large step in the preparations for ITER. This symbolizes the close coupling that the PSI conference has with progress in fusion research, and points to the importance of further development in this particular field. We believe that this 15th PSI conference was very successful in advancing the scientific issues which are relevant at this stage of the research. It should also be noted that the social programs were successful in providing additional forums for building relationships, which could contribute to future collaboration within this community.

The success of the 15th PSI conference is due in large measure to the local organizing committee chaired by Professor Osamu Motojima of NIFS. We are grateful to the chairman and to all the members of the local organizing committee for their significant contributions, in particular to Professor Yukihiro Tomita for his intensive and detailed preparations as the scientific secretary. We acknowledge Professor Masami Fujiwara, the director general of NIFS, for the NIFS management in all aspects of organizing the conference. We also acknowledge the strong support of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the local governments of Gifu prefecture and of Gifu city. We Guest Editors are grateful to Ms. Kuniko Mori, the secretary of the editorial office for these proceedings at NIFS and to Ms. Linda Vaal, the issue manager of the Journal of Nuclear Materials at Elsevier Science BV for their many efforts in the preparation of this volume. We are also thankful to Dr. Byron J. Peterson of NIFS for his cooperation in correcting the language of the manuscripts. We want to thank all of the participants for creating a stimulating conference atmosphere and ask you to extend our thanks to the accompanying persons for their participation in the memorable excursions and evening programs. Finally, on behalf of the Program Committee of the 15th Conference on Plasma–Surface Interactions in Controlled Fusion Devices, to be held in Portland, Maine, USA, in May 2004, under the chairmanship of Dr Bruce Lipschultz, we invite you to return to the conference and present your new results two years from now.

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Guest Editors