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## Preface

The 12th International Conference on Plasma–Surface Interactions in Controlled Fusion Devices (PSI-12) was held in Saint-Raphaël, France from May 20th through May 24th, 1996. This meeting followed those held at Argonne National Laboratory, USA (1974), San Francisco, USA (1976), Culham Laboratory, UK (1978), Garmisch-Partenkirchen, Germany (1980), Gatlinburg, USA (1982), Nagoya, Japan (1984), Princeton, USA (1986), Jülich, Germany (1988), Bournemouth, UK (1990), Monterey, USA (1992) and Mito, Japan (1994). The PSI conference is the largest in the field covering research in fundamental and applied surface physics and plasma physics. These two fields of research are very active and are essential in fusion experiments and reactor design. The Proceedings for these conferences are published as an issue in Journal of Nuclear Materials, as well as a special hardbound volume. They are now a main reference for all work published in this important field of magnetic fusion research. The reader is encouraged to spend some time reading this issue which has been organised in topical sections. A comprehensive and unified list of keywords has also been established by the Guest Editors and will result in an efficient reading of these Proceedings.

The attendance reached 268 scientists: 54% from the European Union, 18% from Japan, 16% from the USA, 5% from the former Eastern bloc, and 7% from other countries. This well-spread distribution of participants adequately represents the successful international scientific cooperation in fusion community.

The increased effort in Plasma–Surface Interaction studies has strengthened the cross-over between the various topics addressed during the conference. Furthermore, the development of the ITER project has introduced engineering concerns, so that investigations address the magnetic fusion topics in a more comprehensive manner than ever. The level of integration of engineering issues, plasma surface physics and plasma physics is such that the conference may be regarded as a milestone. The understanding of every essential aspect of Plasma–Surface Interactions processes and of the plasma edge behaviour leads one to reconsider the study of the basic plasma–surface interactions (recycling, erosion, etc. . .). Major progress has been recorded in two domains. The description of plasma, neutrals and impurities uses standard tools which are very similar in all modelling activities. At the same time, plasma-edge diagnostics have reached a satisfactory status in nearly all magnetic fusion devices.

It can be noticed that if the studies concerning carbon have decreased (except for its hydrogen isotopes retention capability), beryllium and even more tungsten and other high-Z materials are the subjects of many papers. Experiments with such materials may be considered encouraging, but are still inconclusive and should be pursued. X-point divertor plasmas are now thoroughly studied. It appears that the results from various tokamaks compare well and, in many cases, can be modelled adequately. Nevertheless, some elements of the puzzle are still in the shadow. This conference has been marked by the progress report of DT experiments in TFTR, and a thorough review of divertor experiments. Other devices have shown their ability to allow for specific studies or to open complementary and/or alternative lines.

The success of the 12th PSI Conference owes a lot to the effort of the Local Organizing Committee who arranged every detail of the conference. The dedication of Mrs Veronique Poli, Mrs Sylvia Debresne and Dr Benoit De Gentile from the Association EURATOM-CEA sur la Fusion Contrôlée, as well as Mrs Marielle Baroso from Saint-Raphaël Congress, should be acknowledged here. The Programme Committee devoted many hours to selecting the review and invited speakers and screening the submitted abstracts. The International Advisory Committee gave us useful suggestions. We acknowledge the full support of the Association EURATOM-CEA sur la Fusion Contrôlée and the help of the DGXII of the European Commission (ex-EURATOM) and of the Conseil Régional Provence–Alpes–Côte d’Azur.

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