



Preface

The Sixteenth International Conference on Plasma Surface Interactions in Controlled Fusion Devices (PSI 2004) was held in Portland, Maine, USA from 24 to 28 May, 2004. It was organized by the M.I.T. Plasma Science & Fusion Center. Generous financial and staff support was supplied by the Alcator C-Mod group under the direction of Dr. Earl S. Marmor, without which the Conference could not have been attempted. We are also grateful for the invaluable support provided by the offices of the Director of the Plasma Science & Fusion Center, Professor Miklos Porkolab.

The PSI conference is a unique gathering of interdisciplinary topics ranging from pure surface science to pure plasma physics. The unifying theme is the interaction of the edge plasma with the surrounding material walls in fusion devices. Those interactions have important implications for the lifetime of such devices (e.g., through erosion of surfaces), as well as their performance (e.g., eroded material enters the hot core plasma leading to fuel dilution and radiation losses).

Two hundred and fifty-five (255) scientists from 21 countries attended the conference. Unfortunately, due to the overly restrictive nature of the US visa laws, a large number of potential participants could not attend the meeting. We hope that such restrictions can be avoided in the future. A total of 267 papers were presented: 5 Review, 15 Invited, 43 Contributed Oral, and 204 Contributed Poster presentations. All papers submitted for publication in the Journal of Nuclear Materials were refereed by two independent reviewers, according to the standards of the Journal.

The conference dealt with a number of key areas of concern for the development of controlled nuclear fusion: The understanding and effects of Edge-Localized-Modes (ELMs) and disruptions, issues of great importance for reactor design and operation, have been updated and clarified. Research into the parallel and perpendicular transport at the separatrix and in the scrape-off layer plasma has been newly energized, with particular emphasis on the underlying turbulence. The influence of the plasma transport on material migration and impurity transport has been elucidated. Lastly, there were numerous presentations on the important questions of the interaction and effect of plasmas on material surface characteristics as well as the performance and characteristics of various materials used for plasma-facing components.

The meeting venue was Portland, Maine, a delightful, quaint, and lovely New England city and seaport. The weather was generally uncooperative, with too much rain and too little sun. This, however, did not deter the participants as they participated in a multitude of non-scientific activities, including sailing, hiking, baseball, soccer/football, and generally exploring the city. The weather even introduced a bit of mystery to the conference banquet during the boat ride out to Little Diamond Island. The city was suddenly left behind in the fog and the beautiful cove where the banquet was held appeared magically out of the mist. The banquet itself was a quintessential New England Lobster bake, which introduced the participants to the messy nature of eating that crustacean to the accompaniment of local jazz music.

The other major social event of the conference was the reception, held at the Portland Museum of Art. The participants had free run of this beautiful museum, again accompanied by live music.

The evident success of the Conference, including the social events, was due to the efforts of many people. First, and foremost, the Conference staff of Valerie Censabella and Megan Tabak prepared everything needed before the conference, from web pages to organizing events. At the conference itself Lupa Cerda (from GA) and Paul Rivenberg pitched in and made a huge difference. The staff of the Holiday Inn hotel, supervised by Keith Young, had everything in hand and were helpful at all times. The talks themselves went smoothly due to the efforts of Headlight Audio Visual staff, supervised by David Coffin. We guest editors are grateful to Mr. Paul Pearson, Ms. Lucy Dickinson, and the Elsevier staff who were extremely accommodating to the needs of such novice guest editors.

On behalf of the PSI program committee we invite you to the next Conference, to be organized by the Academy Sinica Institute of Plasma Physics (ASIPP) of Hefei China, and chaired by Professor Jiangang Li.

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