



ITER AT THE INTERNATIONAL CONFERENCE ON FUSION REACTOR MATERIALS

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The Eighth International Conference on Fusion Reactor Materials (ICFRM-8) was held in Sendai, Japan, on 26-31 October 1997.



Referring to the background of the ICFRM-8 logo, Prof. T. Kondo, the General Chairman of the Conference, said in his introductory speech:

"This is just a brush drawn red circle. The circle is drawn in a quick single stroke by a calligraphy artist. This red circle resembles a plasma with disruptions in the tokamak doughnut. At the same time, this is a symbol of 'perfection' by which old philosophers of the traditional 'Zen' Buddhism used to show their devotion to philosophical principles. The fusion materials community is similarly devoted to the challenge of 'perfection' of a safe, economic and environmentally acceptable fusion power system."

The Conference on Fusion Reactor Materials takes place every two years starting from 1984, and deals with the most recent results of materials research for fusion reactor components. The previous conference was held at Obninsk (Russia) in 1995 (see ITER EDA Newsletter, Vol. 4, No. 11).

The Eighth Conference was managed jointly by Tohoku University and the organizing committee of ICFRM-8. The Conference was very well organized by the General Chairman Prof. T. Kondo and by the Executive Committee under the chairmanship of Prof. H. Matsui.

The ICFRM is focused on the whole spectrum of materials and technologies to be applied in fusion reactors and related facilities including:

- The understanding of the fundamental radiation effects specific to the fusion environment;
- The development of the engineering database on materials properties needed for the design of current fusion reactors (ITER, etc.);
- The development of high performance advanced materials with the potential of fulfilling the requirements of future fusion energy systems.

The total number of conference participants was over 500, representing 24 countries. In total, 594 invited, oral and poster papers were presented at the Conference.

The presentations were grouped under the following topics:

- Design and Materials,
- Next Fusion Device, e.g., ITER,
- Irradiation Facility and Technology, e.g., IFMIF,
- International Collaboration Program and Materials R&D Strategies,
- Damage Production and Accumulation,
- Breeding Blanket Materials, Design and Technology,
- Plasma Facing Materials and High Heat Flux Materials,
- Low Activation Materials and Other Structural Materials,
- Materials Database,
- Materials Issues for ICF and Other Alternative Concepts,
- Technology and Knowledge Sharing,
- Dielectrics, Insulators, Windows and Optics,
- Magnets and Superconducting Materials,
- Materials Processing, Fabrication, Inspection and Maintenance.

Three sessions were devoted to the ITER materials. These were the oral session "Design-Materials Interface and ITER", the poster session "ITER, Irradiation Facility and Technology" and the discussion session "ITER and Beyond". A large ITER mock-up provided by JAERI was displayed at the center of the main lobby throughout the Conference.

Three invited presentations were given by the ITER Team. The survey of the present status and future prospects of the ITER project was presented by the ITER Director Dr. R. Aymar in the plenary session.

Additional details of the design and material selection for the ITER in-vessel components were presented by Dr. K. Ioki, Head of the ITER JCT Blanket and Vacuum Vessel Division. The progress in developing carbon fibre composites for the ITER plasma facing components was reported by Dr. V. Barabash. Other material aspects of the ITER in-vessel components design and their manufacturing were presented by R. Matera, G. Kalinin and S. Tanaka, members of the Materials Group, ITER Garching JWS.

A feature of the Eighth Conference was a series of discussion sessions on topics of special interest. During the discussion session "ITER and Beyond" the current status of the materials selection (316SS, Cu alloys, Be, W, CFC, Inconel, insulators, cryogenic materials, etc.) for ITER, structural design criteria and advanced fabrication technologies were widely discussed among the materials community. During the discussion materials scientists not involved directly in the ITER activity had the possibility to obtain more information on the materials selection process in the ITER project and, on the other hand, the opinions of the independent materials experts were useful in supporting the current ITER materials selection. Finally, general agreement of the materials selection for ITER was reached.

The results of the comprehensive materials R&D program in support of the ITER design were extensively reported by representatives of the ITER Home Teams. Papers reflecting the state-of-the-art on structural, plasma facing and functional materials were presented at the Conference. The ITER R&D achievements are significant and the main ITER design options are supported by the R&D results.

The proceedings of the Conference will be published in a special volume of the Journal of Nuclear Materials. A record of discussions sessions will also be included in the Conference proceedings.

Several Workshops accompanied the Conference. These were:

- JA/US Workshop on High Efficiency Cooling Systems,
- CARET Symposium on Diffusion in Materials,
- IEA/US-Japan Workshop on Ceramic Breeder Blanket Interaction,
- IEA Workshop on Beryllium (attended by representatives of ITER Materials Group),
- IEA/JUPITER Workshop on SiC/SiC,
- IEA Workshop on Refractory Metals (attended by representatives of ITER Materials Group),
- US/Russian Federation Bilateral Planning and Review Meeting,
- JUPITER Executive Committee Meeting,
- JUPITER Workshop on Modelling and Theory,
- US/Japan Progress Meeting on JAERI/DOE Program,
- IFMIF Users Meeting,
- IEA Workshop on V Alloys for Fusion (attended by representatives of ITER Materials Group),
- IEA Workshop on Low Activation Ferritic Steel,
- IEA Annex-II Working Group Meeting,
- IFMIF Sub-Committee Meeting,
- IEA Fusion Materials Executive Committee Meeting.



The participants enjoyed the traditional Japanese hospitality, including the extraordinary Japanese food and sake.

There is an old Japanese tradition of celebrating some important events or starting an important business by opening a wooden barrel of sake and preparing a toast. On the photograph: S. Mori (Japan), E. Bloom (USA), J.P. Quan (China), K. Ehrlich (Germany), L. Ryabev (Russia), and R. Aymar (ITER Director) are seemingly enjoying their participation in this traditional ceremony at the ICFRM-8 banquet.