

IFERC Newsletter

IFERC

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International Fusion Energy Research Centre, Rokkasho, Aomori 039-3212, Japan

Status of DEMO R&D Activity

On-site EU-JA collaboration on JET-ILW sample analysis started again

Plasma Wall Interaction (PWI) analysis on JET-ILW divertor and wall-limiter tile samples continues as an important collaboration in BA DEMO R&D Phase-II (Task-1: Tritium Technology). Since 2020, due to COVID-19 risk and travel restriction, on-site analysis has been carried out by Japanese experts in QST, National Institutes of Natural Sciences National Institute for Fusion Science (NIFS) and the universities (Ibaraki University, University of Toyama, Shizuoka University, Kindai University and Shimane University).

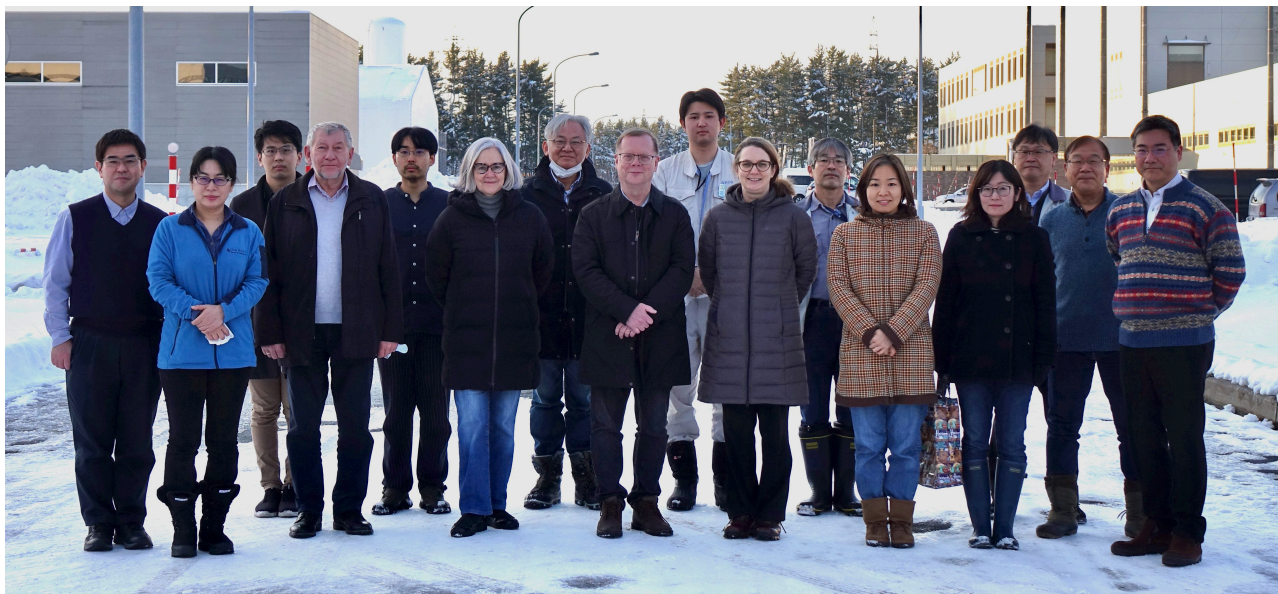
In the week of 16-20 January 2023, three experts from Europe: M. Rubel (KTH, Sweden), A. Widdowson (CCFE, UK), J. Likonen (VTT, Finland), finally joined on-site analysis in QST Rokkasho Fusion Institute, and conducted the tile sample analysis of lamellae tungsten (W) and beryllium (Be) wall limiter extracted after 3rd experiment campaign of JET-ILW. It was recently found that tritium is relatively widely retained on the side surfaces (in the small gap between the neighboring tiles) with impurity deposition. This time, micro analysis of the surface erosion and morphology, and material components of the impurity deposition layers were carried out in order to systematically understand the relationship between the material surface properties and tritium retention.

In total 12 Japanese collaborators (including graduate students) from NIFS and universities joined the work. The planned analysis has been successfully completed by the joint team of JA and EU researchers with supports by QST experts (Fig. 1). The results will be presented in major international conferences such as ICFRM-21 and IAEA FEC-29. At the same time, new proposals for unique measurement techniques for tritium retention and experiments for tritium removal were discussed for future research activities.

(Author) Nobuyuki Asakura



(Fig.1) JA and EU experts analyze JET-ILW W tile samples by SEM/EDS with QST experts.



(Fig.2) JA and EU collaborators in 19 Jan. 2023, and IFERC members.