FusionEPTalks

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Title: Optimizing plasma wall interactions with Boron Lithium coatings

Speaker: Alexis Devitre, PhD candidate, Ghent University (Be)

When: 2020-05-11 17:00:00

Abstract: The plasma facing surfaces of Tokamaks and Stellarators can be heat-treated (baked) or bombarded with energetic particles (discharge cleanings, refer FusionEPtalks #15 - https://m.youtube.com/watch?v=xh0Sj4sJy-A) optimize their effect of fusion plasma. Alternatively, these surfaces can be coated with chemically active materials like Boron (B). These "getters films" retain impurities and cold fuel particles, whereby reducing the power losses and easing access to the high performance regimes of interest. Lithium (Li) offers addition a broad range of in-vessel applications e.g. liquid targets, vapor-box divertor or edge-localized mode pacing. Enhanced confinement times, high-pressure pedestals and smoothed temperature gradients have also been observed under extensive Li coverage. In TJ-II, the deposition of a Boron film before lithiation was found to extend the lifetime of the very reactive Li film. During his master thesis, speaker explored the effect of this substrate and noticed a resilience to molecular oxidation, a consistent D retention and an large recovery of the gettering properties following a helium discharge treatment. In this talk, speaker will review the benefits of Li wall-conditioning and discuss the synergies observed with a B (C) substrate.

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