Abstract Submitted
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Dust remobilization tests in DIII-D divertor[1] I. BYKOV, D. RUDAKOV, R. MOYER, UCSD, S. RATYNSKAIA, P. TOLIAS, KTH, M. DEANGELI, CNR, A. MCLEAN, LLNL, K. BYSTROV, FOM — Accumulation of dust on hot surfaces is a safety concern for ITER operation. We studied the life cycle of pre-deposited dust under ITER-relevant conditions by exposing W samples with W, C and Al (surrogate for Be) dust at the outer strike point (OSP) in a few ELMy H-mode discharges using DiMES. The maxima in the dust ejection rate correspond to ELM crashes under both attached and detached OSP conditions, as confirmed by a fast camera monitoring DiMES. SEM mapping of dust before and after exposures shows that >95% of C and <5% of metal dust gets remobilized in a few shots. In discharges with detached OSP, remaining Al particles melt and fuse together, forming larger spherical grains. At elevated heat flux with attached OSP, they melt, destruct and fuse with W substrate, which is not thermally affected. In this mode W grains partly melt and adjacent particles can weld together, forming larger asymmetric agglomerates with increased adhesion to the surface. We show that these results are consistent with recent observations from Pilot-PSI.

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