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Ion induced structures of millimeter-size on tungsten surface

Polished tungsten sample with purity 99.99% wt. has been exposed to Ar ion beam generated by FALCON ion source. Typical parameters during steady-state expose were the following: Ar ion flux was 2-3×10^22 m-2s-1, heat flux was about 3 MW m-2, average ion energy of 2 keV and the ion fluence reaches 10^27 m-2. During the exposures, the temperature of sample reaches 1200 K. Following the exposure, SEM study revealed that surface is populated with castle-like structures with density of 2-3 features per mm2. Their shape is distinguished by high height-to-diameter aspect ratio and pronounced asymmetry. Typical height of the structures exceeds what has been reported in the literature (1-100 um) and reaches 0.3-0.4 mm.

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