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On He cluster dynamics in W SERGEI KRASHENINNIKOV, ROMAN SMIRNOV, UCSD — The results of our recent simulations of the nano-bubble evolution show that the growth of nano-bubble is accompanied by rather significant distortion of the lattice in the vicinity of the bubble, the formation of the dislocations, and even vacancies, which can serve as the He traps and lead to the nucleation of new nano-bubbles. Therefore, we can have an avalanche effect, which can strongly facilitate the nucleation and growth of nano-bubbles, reduce the penetration of He atoms into the bulk of the sample and, therefore, decrease the width of the layer of nano-bubble near the surface. In this presentation we discuss theoretical model, based on 1D reaction-diffusion equations, describing spatiotemporal dynamics of He clusters in W, which takes into account He trap generation related to the growth of He clusters.

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