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Characterization and modeling of tungsten source during DIII-D tungsten ring experiments*, J. GUTERL, T. ABRAMS, ORAU, D. ELDER, U TORONTO, H.Y. GUO, GA — Two tungsten toroidal rings in the DIII-D divertor region were recently exposed to H-mode plasmas. During these experiments, the gross erosion rate of tungsten was spectroscopically monitored for various ELMy H-mode conditions to characterize the tungsten source in the divertor region (see e.g. [1]). However, only a small fraction of tungsten eroded particles eventually exits the divertor region because of the large tungsten local redeposition. Tungsten local redeposition and migration in the vicinity of the tungsten tiles are simulated using the ERO-OEDGE code package to link the effective tungsten source to the measured gross erosion rates between and during ELMs. It is shown that the energy and angular distributions of sputtered tungsten particles strongly affect the ratio of locally redeposited particles and thus the effective tungsten source. Effects of carbon deposition on tungsten tiles between ELMs on the tungsten erosion rate are also discussed. Preliminary studies of divertor screening on long-range tungsten transport in the SOL between ELMs are also presented.

[1] Fedorczak, N., et alJournal of nuclear materials463 (2015): 85-90
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