Abstract Submitted
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Surface chemistry of Li coatings on polycrystalline W and ATJ graphite irradiated by D and He ions[1] A.L. NEFF, University of Illinois, Urbana, IL 61801, K.E. LUITJOHAN, Purdue University, West Lafayette, IN 47907, J.P. ALLAIN, University of Illinois, Urbana, IL 61801, G. DE TEMMERMAN, Dutch Institute for Fundamental Energy Research (DIFFER), 3430 BE, Nieuwegein, The Netherlands — Because Li has been shown to improve the performance of fusion plasmas, experiments have been performed to investigate the fundamental chemical behavior of these coatings. Earlier experiments on graphite showed that O atoms are the preferential bonding sites for deuterium. This implies that the O, not Li, retains the deuterium but from where does the O originate. ATJ graphite was irradiated with D to remove surface O, next a layer of Li was deposited of various thicknesses, and then some of the coatings were irradiated with D or synergistic D/He. Data from the samples without the post Li irradiation show that the surface O is likely from the Li evaporator or the ambient. Additional experiments investigated lithium coatings on tungsten at medium ($\sim 10^{14} cm^{-2} s^{-1}$) and high ($\sim 10^{20} cm^{-2} s^{-1}$) fluxes of D, He, and synergistic D/He ions at low energies ($\leq$ 1 keV). The medium flux D results show a similar retention behavior in lithiated W, however with He ions mixed in, the D retention is reduced for both graphite and W substrates. High flux results will also be presented from experiments at DIFFER.

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