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Behavior of a SnLi liquid metal eutectic on D-irradiated, porous tungsten substrates[1] ERIC LANG, AVEEK KAPAT, J.P. ALLAIN, Univ of Illinois - Urbana — Tungsten (W) is a common PFC material in the divertor due to its beneficial thermomechanical properties and high sputter threshold [1]. Under helium irradiation, W develops surface morphology such as fuzz. Liquid metals, such as tin-lithium eutectics, have been proposed as PFCs to combat W erosion and allow for a self-healing surface. Tin-dominant eutectics have lower evaporation rates than pure lithium due to increased binding energies, yet exhibit decreased D retention and Li surface segregation [2]. In prior experiments of SnLi coatings on fuzzy W substrates, the SnLi layer has been shown to protect underlying fuzz. Additionally, the liquid metal better adhered to a fuzzy surface than a smooth one [3]. Fuzzy W samples have been coated with a 95 at.% SnLi eutectic and exposed to 250eV D ions at elevated temperatures and fluences of ~10^{17} cm^{-2} . Experiments will be conducted in the IGNIS facility, a multi-functional, *in-situ* irradiation and characterization facility at the University of Illinois. *In-situ* XPS will be used to elucidate irradiation-driven liquid metal behavior to identify surface chemistry changes. Additionally, *ex-situ* SEM will be used to identify surface morphology changes. [1] Naujoks, et al. *Nucl. Fusion.* Vol 36, No. 6 (1996) [2] R. Bastasz et al. *Fus. Eng. Des.* 72 (2004) 111–119 [3] E. Lang, et al. Not yet published. 2016

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