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Impurity contamination effects on the interaction of Li and Sn Films on W (poly)[1] OLUSEYI FASORANTI, Department of Chemistry, Princeton University, BRUCE KOEL, Department of Chemical Biological Engineering, Princeton University — Plasma-solid interactions under fusion divertor conditions lead to continuous material erosion and may result in performance degradation of the plasma-facing components. Liquid metals such as Li and Sn may help to circumvent this issue due to their ability for self-recovery and heat-flux management. This has driven interest in understanding plasma-liquid metal interactions. We have shown in our lab that surface science experiments can examine discrete aspects of plasma-surface interactions by enabling clean and controlled deposition of metal films. We will review our recent results on the thermal stability of ultrathin Li and Sn films on a polycrystalline W surface using surface diagnostic methods such as Temperature Programmed Desorption, Auger Electron Spectroscopy, and Ion Scattering Spectroscopy. These studies examine Li-W and Sn-W interfaces and investigate the impact of impurities. We will discuss relevant issues such as the differences in oxygen uptake between solid and liquid lithium films and the effects of post-oxidation, as well as pre-adsorbed surface oxygen and carbon, on the thermal stability of these films. We plan to present additional studies of deuterium ion uptake and retention on Li and Sn films.

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