

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

The temperature and ion energy dependence of deuterium retention in lithium films¹ LUXHERTA BUZI, BRUCE E. KOEL, Princeton Univ, CHARLES H. SKINNER, PPPL — Lithium conditioning of plasma facing components in magnetic fusion devices has improved plasma performance and lowered hydrogen recycling. For applications of lithium in future high heat flux and long pulse duration machines it is important to understand and parameterize deuterium retention in lithium. This work presents surface science studies of deuterium retention in lithium films as a function of surface temperature, incident deuterium ion energy and flux. Initial experiments are performed on thin (3-30 ML) lithium films deposited on a single crystal molybdenum substrate to avoid effects due to grain boundaries, intrinsic defects and impurities. A monoenergetic and mass-filtered deuterium ion beam was generated in a differentially pumped Colutron ion gun. Auger electron spectroscopy and X-ray photoelectron spectroscopy were used to identify the elemental composition and temperature programmed desorption was used to measure the deuterium retention under the different conditions.

¹Support was provided through DOE Contract Number DE-AC02-09CH11466

Luxherta Buzi
Princeton Univ

Date submitted: 15 Jul 2016

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