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Deuterium retention and hydride formation by low energy deuterium ions incident on lithium films on Mo(110) JOHN ROSZELL, Princeton University, ANGELA CAPECE, CHARLES SKINNER, Princeton Plasma Physics Laboratory, BRUCE KOEL, Princeton University — The presence of lithium on plasma facing components (PFCs) has been shown to improve plasma performance through the reduction of hydrogen recycling. Understanding the interactions between plasma species and lithium-conditioned PFCs is important to the successful implementation of lithium in a tokamak environment. Fundamental surface science experiments performed in a controlled UHV environment are used to investigate the interactions between deuterium ions and a lithium-coated Mo(110) crystal surface. The effects of deuterium ion bombardment on a Mo(110) substrate before and after lithium deposition are explored with a well characterized D_2^+ ion beam capable of achieving energies of <10 eV/D^+. Information about surface chemistry and composition is measured using X-ray photoelectron spectroscopy (XPS), Auger electron spectroscopy (AES) and temperature programed desorption (TPD) with a specific focus on deuterium retention and hydride formation in the lithium film. Data collected will be compared with results from Mo(100) as well as a TZM alloy in order to investigate the effects of surface structure, grain boundaries, and impurities.

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