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Deuterium sputtering of Li and Li-O films ANDREW NELSON, LUXHERTA BUZI, ROBERT KAITA, BRUCE KOEL, Princeton Plasma Phys Lab — Lithium wall coatings have been shown to enhance the operational plasma performance of many fusion devices, including NSTX and other tokamaks, by reducing the global wall recycling coefficient. However, pure lithium surfaces are extremely difficult to maintain in experimental fusion devices due to both inevitable oxidation and codeposition from sputtering of hot plasma facing components. Sputtering of thin lithium and lithium oxide films on a molybdenum target by energetic deuterium ion bombardment was studied in laboratory experiments conducted in a surface science apparatus. A Colutron ion source was used to produce a monoenergetic, mass-selected ion beam. Measurements were made under ultrahigh vacuum conditions as a function of surface temperature (90-520 K) using x-ray photoelectron spectroscopy (XPS), Auger electron spectroscopy (AES) and temperature programmed desorption (TPD). Results are compared with computer simulations conducted on a temperature-dependent data-calibrated (TRIM) model.

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