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XPS studies of NSTX tiles and in-situ analysis of Li exposed graphite simulating plasma-Li surface interactions.[1] J.P. ALLAIN, S. HARILAL, M. NIETO, M.R. HENDRICKS, A. HASSANEIN, Argonne National Laboratory — Lithium has been considered a potentially viable plasma-facing surface enhancing the operational performance of fusion devices such as: TFTR and NSTX. In particular, lithium coatings are used in NSTX runs to enhance energy confinement. Questions remain on the role of lithiated surfaces and multi-material interactions at the plasma edge. Processes of interest are the erosion of lithiated graphite surfaces, diffusion of Li into graphite and D-retention of lithium-covered surfaces. These processes consist of spatial scales from a few monolayers at the vacuum/film interface to 100's nm deep. Studies are conducted in the IMPACT experimental facility. IMPACT is designed to study *in-situ* how multi-component surfaces evolve under particle irradiation. Techniques include: low-energy ion scattering spectroscopy (LEISS), direct recoil spectroscopy, X-ray photoelectron spectroscopy and in-situ erosion diagnosis. In this paper detailed LEISS and XPS studies of lithiated graphites surfaces simulating conditions in NSTX are presented.

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