

Abstract Submitted  
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**NSTX Experiments with Evaporated Lithium Coatings on Plasma-Facing Surfaces**<sup>1</sup> M.G. BELL, H.W. KUGEL, R. KAITA, R.P. MAJESKI, D.K. MANSFIELD, L.A. ROQUEMORE, C.H. SKINNER, J.R. TIMBERLAKE, L.E. ZAKHAROV, Princeton Plasma Physics Lab., AND THE NSTX TEAM — An evaporator has been used to apply lithium to the carbon tiles on the center column and lower divertor in NSTX. Twelve depositions, ranging from about 10mg to 5g of lithium, were performed. In 1MA L-mode, lower single-null divertor, deuterium plasmas with 1MW of NBI, the volume-average electron density decreased by up to 25% after depositing about 400mg of lithium, compared to a similar shot before coating, and the electron and ion temperatures both increased about 20% on axis. The reduction in density lasted only for one discharge, although a residual effect on the temperature persisted for several shots and the line emission from oxygen decreased dramatically for several days of operation. In similar H-mode plasmas with 5MW NBI, there was an increase of about 25% in the central electron and ion temperatures after applying 440mg of lithium, but there was no reduction in the average density, although there were effects on its profile shape. Increasing the amount of lithium beyond about 400mg did not appear to increase or prolong its effectiveness. Examination of the divertor tiles at the conclusion of the experiments showed migration of the lithium away from the strike-points after its deposition.

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