

Abstract Submitted
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Measurements of core lithium concentration in NSTX¹ R.E. BELL, M. PODESTA, B.P. LEBLANC, A. DIALLO, F. SCOTTI, Princeton Plasma Physics Laboratory — The core lithium concentration in NSTX was measured using charge exchange recombination spectroscopy during the FY2010 experimental run, which featured routine lithium conditioning of plasma facing surfaces. Both active and background Li III emission at 5167Å (n=7-5) and C VI emission at 5291 Å (n=8-7) were monitored with spatially-interleaved vertical-viewing sightlines over the outer major radius (120-157 cm) of the plasma. These line-integrated Li and C measurements were inverted to recover profiles and account for the differences in the charge exchange cross sections between Li and C. No significant accumulation of lithium was observed in the core plasma with ΔZ_{eff} due to lithium ≤ 0.006 . A persistently low lithium concentration was observed, with $N_{Li}/N_e < 0.1\%$, despite heavy lithium conditioning. The ratio of lithium to carbon density remained roughly proportional, depending on plasma radius, with $N_{Li}/N_C \leq 1\%$ over a wide range of plasma parameters.

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