

Abstract Submitted
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Effects of Lithium-Coated Plasma-Facing Components on NSTX Discharges¹ R. KAITA, H. KUGEL, Princeton Plasma Physics Laboratory, NSTX TEAM — Experiments on National Spherical Torus Experiment (NSTX) have demonstrated the efficacy of lithium coatings on plasma-facing components (PFC's) in providing significant and recurring improvements to plasma performance. The benefits of such coatings have been observed in both L- and H- mode divertor plasmas, with auxiliary heating from neutral beams and high-harmonic radiofrequency heating. Important upgrades in 2008 were the addition of a second LITHium EvaporatoR (LITER) to increase the PFC coating rate, and shutters that eliminated the need for the LITER's to cool to stop evaporation prior to a discharge. As in previous lithium coating experiments, there were decreases in the plasma density and ELM activity, and increases in the electron temperature, ion temperature, energy confinement time, and DD neutron rate. A notable enhancement over operation with one LITER was the larger percentage increase in pulse duration over plasmas prior to lithium evaporation. The more efficient flux consumption this suggests could be from changes in conductivity, due to broader temperature profiles from the lower edge recycling lithium-coated PFC's are expected to provide.

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