

Abstract Submitted  
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**Plasma Response to Lithium-Coated Plasma-Facing Components in NSTX**<sup>1</sup> M.G. BELL, H. KUGEL, D. MANSFIELD, R. KAITA, S. GERHARDT, S. PAUL, R.E. BELL, PPPL, R. MAINGI, J. CANIK, ORNL, NSTX TEAM — Lithium coatings have been routinely applied by evaporation onto the carbon surfaces of the lower divertor and other plasma-facing components in NSTX. In NBI-heated, deuterium H-mode plasmas, the lithium decreased the density in the plasma edge, reduced the inductive flux consumption, and increased the electron temperature, ion temperature and energy confinement time. Reductions in ELM frequency occurred, including complete ELM suppression for periods up to about 1s, apparently as a result of altering the stability of the edge. With ELM suppression, the effective ion charge and radiated power increased as a result of a buildup in carbon and metallic impurities, although lithium itself remained at a low level in the core, < 0.1%. The impurity buildup could be inhibited by repetitively triggering ELMs with brief pulses of an  $n = 3$  field perturbation. Lithium powder has also been injected directly into the scrape-off layer where it became ionized and flowed along the magnetic field to the divertor plates. This method of coating produced similar effects to evaporated lithium but at much lower amounts.

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