

## Effect of lithium in the DIII-D SOL and plasma-facing surfaces

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**Abstract** Lithium has been introduced into the DIII-D tokamak, and migration and retention in graphite have been characterized since no lithium was present in DIII-D initially. A new regime with an enhanced edge electron pedestal and  $H_{98y2} \leq 2$  has been obtained with lithium. Lithium deposition was not uniform, but rather preferentially deposited near the strike points, consistent with previous <sup>13</sup>C experiments. Edge visible lithium light (LiI) remained well above the previous background during the entire DIII-D campaign, decaying with a 2600 plasma-second e-fold, but plasma performance was only affected on the discharge with lithium injection. Lithium injection demonstrated the capability of reducing hydrogenic recycling, density, and ELM frequency.

Graphite and silicon samples were exposed to a lithium-injected discharge, using the DiMES system and then removed for *ex-situ* analysis. The deposited lithium layer remained detectable to a depth up to 1  $\mu\text{m}$ .