

Abstract Submitted  
for the DPP05 Meeting of  
The American Physical Society

**Helium retention and Hydrogen absorption in FLiRE** BENJAMIN SCHULTZ, PAUL BRENNER, DAVID RUZIC, University of Illinois - Plasma Materials Interaction Group — The FLiRE (Flowing Lithium Retention Experiment) facility consists of a flow loop which contains a two sections to observe flow along ramps in an upper chamber. As the Li exits the upper chamber it makes a vacuum seal isolation of the upper chamber from a lower one where thermal desorption spectroscopy can take place. By applying an ion beam or a plasma pulse to the open-channel Li flow on the ramp, studies can be made of He and H retention by measuring the partial pressure of He in the lower TDS chamber. Previous studies have shown about a 1% to 2% retention of He over a time scale sufficient to exit a potential flowing Li-walled reactor. The significance of such a result is very high and needs to be verified. It is possible that He implanted in the ramp before flow was initiated was absorbed leading to the observed increase. The experiment has been altered to address this and other concerns. Research on hydrogen absorption in liquid lithium exposed to hydrogen plasma has also been conducted. Overall results and their implications towards large scale fusion reactors are given.

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Date submitted: 01 Aug 2005

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