

Abstract Submitted
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Development of liquid lithium plasma facing components on LTX¹

M. LUCIA, R. MAJESKI, R. KAITA, E. KEARNS, PPPL — The Lithium Tokamak Experiment (LTX) will provide the first data from a tokamak with liquid lithium as the main (about 90% surface coverage) plasma facing component (PFC). Until recently, lithium results on LTX had been restricted to solid coatings produced by evaporation onto cold shells. This poster describes initial efforts to develop and analyze active liquid lithium PFCs on LTX. A lithium fill system has been designed using a heated tungsten crucible assembly to rapidly deploy liquid lithium onto pre-heated LTX shells. In contrast with the earlier slow evaporation of lithium, this crucible releases its entire inventory at once, quickly filling the LTX shell reservoirs with liquid lithium. A system for testing dendritic tungsten as a candidate substrate for liquid lithium PFC has also been designed. Lithium was shown to wet the dendritic tungsten at about 350°C, and the lithium-wetted surface can be characterized while it acts as a limiter during an LTX plasma shot. Finally, research in collaboration with Purdue University is underway to adapt the Materials Analysis Particle Probe (MAPP) to LTX. With its extensive diagnostic capabilities, MAPP will allow for *in situ* study of surface physics inside LTX.

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