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Cryogenic Pulsed Laser Deposition of Lithium for ^{4}He Absorption Experiments E. VAN CLEVE, P. TABOREK, J.E. RUTLEDGE, University of California, Irvine — We are developing techniques to prepare films of alkali metals on cryogenic surfaces by laser ablation. The alkali metals are known to provide weak adsorption potentials for ^{4}He which results in nontrivial wetting and superfluid onset phenomena. Film preparation technique strongly affects some ^{4}He wetting properties as has been seen in contact angle measurements of ^{4}He on Cs surfaces. Of particular interest are Li surfaces which at low temperatures are predicted (1) to be superfluid with less than monolayer total ^{4}He coverage. We have grown Li films on using 532 nm light from an Nd-YAG laser on to room temperature quartz crystal microbalances (QCM). We will present measurements of film growth rate as a function of the laser fluence. Preliminary ^{4}He isotherm measurements on Li films laser ablated onto 4K QCMs will be compared with adsorption isotherms on the heavier alkali metal surfaces.

(1) Massimo Boninsegni and Milton W. Cole, J. Low Temp. Phys. 113, 393 (1998).

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