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Studies of soft x-ray transmission through grid supported CH layers[1] J.S. DAVIS, Naval Surface Warfare Center/University of Michigan, P.A. KEITER, S.R. KLEIN, University of Michigan, Y. FRANK, Soreq Nuclear Research Center, R.P. DRAKE, D. SHVARTS, University of Michigan — Recent experiments have shown that it may be possible to use laser-heated high-Z foils to drive new radiation transport (RadTran) experiments in gas fill tubes. These tubes must be pressurized above 1atm and the x-ray source needs to be physically separated from the gas. To achieve this, a grid-supported CH seal is implemented. The grid reduces the total surface area of the gas-seal interaction region lowering the thickness requirements for the CH layer. However, as mesh spacing is reduced, hole closure from wire ablation may reduce the x-ray flux. To optimize the seal design, experiments were performed measuring x-ray transmission through CH layers supported by meshes composed of copper, gold, or stainless steel and using hexagonal or square mesh geometries. The x-ray source was formed by heating a 0.5 m thick planar gold foil with a 4 ns laser pulse at an intensity of $2\times10^{14}W/cm2$. Emission data was collected using an x-ray framing camera and a Dante photodiode array. Experiments show that the CH layers can reach effective temperatures of nearly 100 eV but mesh design significantly affects performance, with a nearly 20 eV difference between the best and worst performing seal targets. This talk will discuss our findings and their impact on future RadTran experiments.

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Joshua Davis
Naval Surface Warfare Center

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