

Abstract Submitted  
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**In-Situ Preparation of Radioactive Tracers in NIF Capsules**

MARK STOYER, LLNL — Inertial Confinement Fusion (ICF) experiments at the National Ignition Facility (NIF) will probe fundamental high energy density physics of plasmas. Radiochemical diagnostics will provide information on ablator and fuel rho-R, yield, asymmetry, and mix by collecting both gaseous and solid debris samples following an implosion. Many experiments utilize ratios of produced activities, but full utilization of the technique requires knowledge of sample collection efficiencies. Gaseous samples are expected to be collected with high efficiency, but solid sample collection is typically limited by location of the collecting apparatus. Activation of ICF capsules has been utilized at other laser facilities [1-2] to produce a radioactive tracer in the ablator of the capsule that can be used to measure the solid collection efficiency. This talk will describe preliminary experiments activating CH(Ge) NIF capsules and Au hohlraums in the High Flux Isotope Reactor (HFIR) at ORNL in order to produce Ge, As, and Au isotopes for determination of collection efficiency, spatial distribution of the debris, efficacy of various collectors, and if there are preferred locations for debris collection. This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344. [1] S.M. Lane and M.B. Nelson, Rev. Sci. Inst. 61 (1990) 3298. [2] E.M. Campbell, H.G. Hicks, W.C. Mead, et al. J. Appl. Phys. 51 (1980) 6065.

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