

HTPD 2018



Contribution ID : 173

Type : not specified

2.28 Distribution of collected target debris using the Large Area Solid Debris Radiochemistry Collector

Monday, 16 April 2018 10:46 (120)

The Large Area Solid Radiochemistry (LASR) collector was deployed at the National Ignition Facility (NIF) in 2017 to collect solid debris samples from NIF targets. The collector was a 20-cm vanadium foil (active area) fielded 50 cm from the NIF target chamber center. The foil was surrounded by a side enclosure, which was covered by an aluminum foil. After a shot, the vanadium and aluminum foils were removed and processed individually via radiation counting. The collector has applications for measuring nuclear data using the NIF capsule as an intense neutron source. LASR was fielded on two shots, both of which had a monolayer of ²³⁸U embedded in the capsule ablator 10 μm from the inner surface. Fission and activation products produced via the interaction of 14-MeV fusion neutrons and ²³⁸U were collected using LASR. Subsequent analysis via gamma spectroscopy indicated that the distribution of fission products was not uniform, and the aluminum side foil collected more low- and high-mass wing fission products compared to the vanadium surface, which was enriched in peak and valley fission products. The results from these shots will be used to better design future nuclear data experiments at NIF.

Primary author(s) : DESPOTOPULOS, John (Lawrence Livermore National Lab)

Co-author(s) : SHAUGHNESSY, Dawn (Lawrence Livermore National Lab); GHARIBYAN, Narek (Lawrence Livermore National Lab); MOODY, Kenton (Lawrence Livermore National Lab); GRANT, Patrick (Lawrence Livermore National Lab); YEAMANS, Charles (Lawrence Livermore National Lab); WALTZ, Cory (Lawrence Livermore National Lab)

Presenter(s) : DESPOTOPULOS, John (Lawrence Livermore National Lab); SHAUGHNESSY, Dawn (Lawrence Livermore National Lab); GHARIBYAN, Narek (Lawrence Livermore National Lab); MOODY, Kenton (Lawrence Livermore National Lab); GRANT, Patrick (Lawrence Livermore National Lab); YEAMANS, Charles (Lawrence Livermore National Lab); WALTZ, Cory (Lawrence Livermore National Lab)

Session Classification : Session #2, Monday Morning Poster Session