

Analysis of Chemical Vapor Deposition Diamonds for Neutron Detection on OMEGA

Seth, Ishir

Chemical vapor deposition (CVD) diamond detectors are being investigated as alternatives to scintillators for neutron detection in fusion environments. Data were obtained for four CVD detectors used on the OMEGA laser fusion facility. A neutron-detection model was developed to quantify the energy deposited per neutron interaction using measured detector sensitivities. The average energy deposited per interaction was 27 to 44 keV for 14-MeV neutrons and 4.8 keV for 2.5 MeV neutrons. Using known electron mobility and signal rise times, the effective thicknesses of the detectors were calculated. This work provides insight that will aid the development of future CVD detectors.

Awards Won:

Fourth Award of \$500