Abstract Submitted
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Fast Neutron Activation of Ubiquitous Materials[1] MICHELLE LEE, University of California, Berkeley, OLUWATOMI AKINDELE , KEENAN THOMAS, Lawrence Livermore National Laboratory, PEDRO GUILLAMON , University of Sao Paulo, Sau Paulo, Brazil, JORDAN SABELLA, University of California, Berkeley, ROSS MEYER, HOWARD SHUGART[2], ERIC NORMAN, Lawrence Berkeley National Laboratory — Nuclear explosions can expose ubiquitous materials to large numbers of neutrons producing a variety of radioactive isotopes. In an attempt to simulate such phenomena from both fission and thermonuclear explosions, irradiations with ˜3 and ˜14 MeV neutrons were performed on 25 different materials using LBNL's 88 Inch Cyclotron. For each neutron energy, the expected radioisotopes, half-lives, and gamma- ray energies were deduced using existing data from the National Nuclear Data Center and the Table of Radioactive Isotopes. The beta-delayed gamma rays emitted from the activated targets were measured with three different high-purity germanium detectors at varying times following irradiation. Using this data, we were able to calculate the initial activities of one or more radioisotopes from each activated target. By examining the ratios of activities of different isotopes from the 3 and 14 MeV data, we have been able to identify several materials that are particularly sensitive to the neutron energy spectra. Preliminary results from this work will be presented.

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