

Abstract Submitted
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^{238}U shape isomer population with a neutron beam¹ J.A. CAGGIANO, J.J. RESSLER, P. PEPLOWSKI, Battelle/PNNL, H. WELLER, TUNL — Actinide nuclei are expected to have isomeric nuclear states that are significantly. These isomers are called shape isomers, or “fission” isomers, because of the preference of the higher-Z isomers to decay via fission. Shape isomers can decay by gamma-ray emission or fission and have been identified in some of the thorium, uranium and the trans-uranic nuclei. Semi-empirical studies of these shape isomers indicate that the lower-Z actinides such as uranium and neptunium may preferentially decay via gamma-ray emission. ^{236}U and ^{238}U are known examples. The ^{238}U shape isomer population via neutron bombardment has been measured in the energy range of approximately 2-6 MeV and at 14.5 MeV (using a d-t neutron generator), but no measurements have been reported between 6 and 14.5 MeV. In previous measurements, fission fragments were used to characterize the population instead of the (dominant) gamma ray branch. Thus, we performed an experiment to investigate shape isomer population using a neutron beam in the energy range of 5-15 MeV to look for the characteristic shape isomer gamma-rays using the neutron irradiation facility at TUNL. Results of our measurements will be presented.

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Jac Caggiano
Battelle/PNNL

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