

$^{102}\text{Pd}(n, \gamma)$ cross section measurement using DANCE

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Most of the nuclei heavier than Fe are produced via neutron capture reactions in the so called s or r process. The few nuclei on the proton rich side of the valley of stability cannot be produced that way, but are mainly produced via photodisintegration on heavier nuclei (p process). Since the p process produces free neutrons, which can be captured, neutron capture cross sections are important for understanding this process. The neutron capture cross section of the proton rich nucleus ^{102}Pd was measured with the Detector for Advanced Neutron Capture Experiments (DANCE) at the Los Alamos Neutron Science Center. The target was a 2 mg Pd foil with 78% enriched ^{102}Pd . It was held by a $0.9\ \mu\text{m}$ thick Mylar bag which was selected after comparing different thicknesses of Kapton and Mylar for their scattering background. To identify the contribution of the other Pd isotopes the data of a natural Pd sample was compared to the data of the ^{102}Pd enriched sample. A ^{12}C sample was used to determine the scattering background. Results of the $^{102}\text{Pd}(n, \gamma)$ cross section for neutron energies from thermal to 100 keV are presented.

This work has benefited from the use of the Los Alamos Neutron Science Center at the Los Alamos National Laboratory. This facility is funded by the US Department of Energy and operated by the University of California under Contract W-7405-ENG-36. The Colorado School of Mines group is funded via DOE Grant: DE-FG02-93ER40789.