MEASUREMENTS OF NEUTRON CAPTURE CROSS SECTIONS FOR GD ISOTOPES IN THE ENERGY REGION FROM 10 KEV TO 90 KEV

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The neutron capture cross sections of Gd isotopes (^{155}Gd, ^{156}Gd, ^{157}Gd, and ^{158}Gd) have been measured in the neutron energy range from 10 to 90 keV using the 3-MV Pelletron accelerator of the Research Laboratory for Nuclear Reactors at the Tokyo Institute of Technology. Pulsed keV neutrons were produced from the ^{7}Li(p,n)^{7}Be reaction by bombarding the lithium target with the 1.5-ns bunched proton beam from the Pelletron accelerator. The incident neutron spectrum on a capture sample was measured by means of a TOF method with a ^{6}Li-glass detector. Capture γ-rays were detected with a large anti-Compton NaI(Tl) spectrometer, employing a TOF method. A pulse-height weighting technique was applied to observed capture γ-ray pulse-height spectra to derive capture yields. The capture cross sections were obtained by using the standard capture cross sections of ^{197}Au. The present results were compared with the previous measurements and the evaluated values of ENDF/B-VI.