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STUDY OF (γ, p)-REACTIONS ON NICKEL ISOTOPES

Wednesday, 13 July 2022 18:05 (15 minutes)

The study of photonuclear reactions on nickel isotopes is of great fundamental and applied importance. The study of (γ, n)- and (γ, p)-reactions on nickel isotopes makes it possible to study the nature of direct, semi-direct, and statistical processes in such nuclei region.
We have carried out activation studies of weighted average yields of (γ, p)-reactions for 58,62Ni with the 20 MeV bremsstrahlung beam on natural nickel targets.
The spectra of irradiated targets were measured using a Canberra semiconductor spectrometer with an energy resolution of 0.75 keV at the 122 keV gamma line and 1.7 keV at the 1378 keV gamma line.
The 57,61Co activities were reliably identified in the studied spectra. Moreover, the 61Co activity was reliably detected using the 909 keV gamma line, which made it possible to minimize the error in measuring the gamma spectra of "thick" targets. As a result, the following values of the weighted average yields of (γ, p)-reactions were obtained: for 57Co Y=15.1±0.7 mb, for 61Co Y=1.61±0.16 mb.
Based on the simulation results within the TALYS 1.96 program code, the following values were obtained: for 57Co Y=6.5 mb, for 61Co Y=0.44 mb. The obtained results are discussed.
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The speaker is a student or young scientist

No

Section

1. Experimental and theoretical studies of nuclear reactions

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