**STUDY EXCITATION OF ISOMERIC STATES IN (γ,n), (n,2n) AND (n,γ) REACTIONS ON 108,110Pd**

S.R. Palvanov 1, A.X. Inoyatov2, G. Atajanova1, D.I. Tuymurodov1,

A.A. Tuymuradov1, B.I. Kurbonov3

*1Faculty of Physics, National University of Uzbekistan, Tashkent, Uzbekistan*

*2Joint Institute for Nuclear Research, Dubna, Russia*

*3Institute of Nuclear Physics, Tashkent, Uzbekistan*

e-mail: [satimbay@yandex.ru](mailto:satimbay@yandex.ru), [palvanov1960@gmail.com](mailto:palvanov1960@gmail.com)

This work presents work results of investigation of the isomeric yield ratios of the 110Pd(γ,n)109m,gPd, 110Pd(n,2n)109m,gPd and 108Pd(n,γ)109m,gPdreactions. The isomeric yield ratios were measured by the induced radioactivity method. Samples of natural Pd (Palladium metal foils) have been irradiated in the bremsstrahlung beam in the energy range of 10÷35 MeV with energy step of 1 MeV. For 14 MeV neutron irradiation, we used the NG-150 neutron generator. For the (n, γ) reaction, experiments were carried out at the ВВЗ-СM research reactor of the Institute of Nuclear Physics of the Academy of Sciences of the Republic of Uzbekistan.

The gamma spectra reactions products were measured with a spectroscopic system consisting of HPGe detector CANBERRA with energy resolution of 1,8 keV at 1332 keV gamma ray of 60Co, amplifier 2022 and multichannel analyzer 8192 connected to computer for data processing. The filling of the isomeric and ground levels was identified according to their γ lines. The values of isomeric ratios for the reactions (γ,n), (n,2n) and (n,γ) are respectively: 0.063±0.003 (at Eγmax = 30 MeV); 0.43±0.03 (at En=14.1 MeV) and 9.1±0.8. Using the isomer yield ratio and the total cross section of the (γ, n) reaction on 110Pd [1] received the cross sections of (γ, n)m and (γ, n)g reactions. The cross section isomeric ratios at Eγ=Em are estimated.

The isomeric cross-section ratios were determined in the case of the reaction (n, 2n). In order to obtain the absolute values of the cross sections for the ground state and for the isomeric state, use was made of methods based comparing the yields of the reaction under study and the monitoring reaction. The reaction 27Al(n,α)24Na (T1/2 = 15 h, Eγ = 1368 keV). For reaction (n,γ), 197Au(n,γ) was used as a monitor reaction

The experimental results have been discussed, compared with those of other authors as well as considered by the statistical model. Theoretical values of the isomeric yield ratios have been calculated by using code TALYS-1.6.

1. A.V. Varlamov et al. Atlas of GDR. INDS(NDS)-394.// Vienna: IAEA, 1999.