EXCITATION OF ISOMERIC STATES IN REACTIONS (γ,n) AND (n,2n) ON ^{76}Ge, ^{82}Se AND ^{81}Br

Palvanov S.R.[1,2], Kajumov M.[3], Saydimov Y.A.[1]
[1]*Department of Physics, National University of Uzbekistan, Tashkent, Uzbekistan;*
[2]*Institute of Applied Physics, National University of Uzbekistan, Tashkent, Uzbekistan;*
[3]*Institute of Nuclear Physics, Tashkent, Uzbekistan*
E-mail: satimbay@yandex.ru

In the present work results of investigation of the isomeric yield ratios Y_m/Y_g and cross-section ratios σ_m/σ_g of the ^{76}Ge(γ,n)^{75m,g}Ge, ^{76}Ge(n,2n)^{75m,g}Ge, ^{82}Se(γ,n)^{81m,g}Se, ^{82}Se(n,2n)^{81m,g}Se ^{81}Br(γ,n)^{80m,g}Br and ^{81}Br(n,2n)^{80m,g}Br are presented. The isomeric yield ratios were measured by the induced radioactivity method.

Samples of natural Se have been irradiated in the bremsstrahlung beam of the betatron SB-50 of Institute of Applied Physics of National University of Uzbekistan 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 of Institute of Nuclear Physics.

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 ^{60}Co, amplifier 2022 and multichannel analyzer 8192 connected to computer for data processing.

The yields of the metastable state decays were evaluated by using the 254 keV (^{73m}Se, $J^{\pi}=1/2^{-}$, $T_{1/2}$=38.9 m) and 103 keV (^{81m}Se, $J^{\pi}=7/2^{+}$, $T_{1/2}$=57.3 m) γ-rays. The yields of the ground state decays were evaluated by using the 361 keV (^{73g}Se, $J^{\pi}=7/2^{+}$, $T_{1/2}$=7.1 h) and 275 keV (^{81g}Se, $J^{\pi}=1/2^{-}$, $T_{1/2}$=18.5 m) γ-rays.