LXX International conference "NUCLEUS –2020. Nuclear physics and elementary particle physics. Nuclear physics technologies"

Contribution ID: 360

Type: Poster report

¹⁶⁶*Ho* formation in photonuclear reactions on a natural mixture of erbium isotopes

Tuesday, 13 October 2020 18:35 (20 minutes)

The method of induced activity was used to study photonuclear reactions on a natural mixture of erbium isotopes. The experiment was performed on a bremsstrahlung of an RM55 electron accelerator at an electron energy of 55 MeV. The study examined the possibility of producing carrier-free ¹⁶⁶ Ho isotope in photonuclear reactions on a natural mixture of erbium isotopes. Experimental data on the cross-sections of photoproton reactions on Er isotopes are not available in the literature. The yields of the formation of ^{161,165} Er isotopes as a result of ^{nat} Er(γ , in) reactions, the target nuclide ¹⁶⁶ Ho and the side nuclide ¹⁶⁵ Ho as a result of ^{nat} Er(γ , in1p) reactions were measured. The yield of ¹⁶⁶ Ho formation under the experimental conditions was approximately $4 \cdot 10^4 Bq/(\mu A \cdot h \cdot g/cm^2)$. The experimentally obtained yields of photonuclear reactions are compared with the yields calculated using theoretical cross-sections of photonuclear reactions from the combined model of photonuclear reactions (CMFR) and the TALYS program. There is a good agreement between the experimental data and the results of the calculation by CMFR for both photoneutron and photoproton reactions.

Primary authors: Mr ALIEV, R (Moscow State University, Faculty of Chemistry, Moscow, Russia; NRC "Kurchatov Institute", Moscow, Russia); Mr BELYSHEV, S (Moscow State University, Faculty of Physics, Moscow, Russia); Prof. ISHKHANOV, B (Moscow State University, Faculty of Physics, Moscow, Russia; Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow, Russia); Mr KUZNETSOV, A (Moscow State University, Faculty of Physics, Moscow, Russia); Mr KUZNETSOV, A (Moscow State University, Faculty of Physics, Moscow, Russia); Mr KHANKIN, V (Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow, Russia); Mr KHANKIN, V (Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow, Russia); Ms KACHALOVA, D (Moscow State University, Faculty of Physics, Moscow, Russia)

Presenter: Mr KUZNETSOV, A (Moscow State University, Faculty of Physics, Moscow, Russia; Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow, Russia)

Session Classification: Poster session 6

Track Classification: Section 8. Nuclear medicine.