MEASUREMENT AND ANALYSIS OF THE TOTAL THICK TARGET YIELD FROM $^{13}C(\alpha,n_0)^{16}O$ REACTION

P. S. Prusachenko[1], T. L. Bobrovsky[1,2], M. V. Bokhovko[1], A. F. Gurbich[1]

[1]*Institute for Physics and Power Engineering, Obninsk, Russia;*
[2]*National Research Nuclear University MEPhI, Moscow, Russia*

E-mail: prusachenko.pavel@gmail.com

The thick-target neutron spectra from the $^{13}C(\alpha,n_0)^{16}O$ reaction were measured for the energy range of 3.0-6.5 MeV at 10 angles in the laboratory angle interval of 0-150º. The thick target yield was determined by integration of the neutron spectra over the neutron energy range corresponding to the $^{13}C(\alpha,n_0)^{16}O$ reaction followed by integration of the obtained angular distribution of the differential thick target yield over the solid angle 4π. The content of ^{13}C atoms in the target was determined by ion beam analysis with accuracy of <1%. The obtained thick target yield values support the calculated ones based on the $^{16}O(n,\alpha_0)^{13}C$ reaction cross-section evaluation from the ENDF/B-VIII.0 library.