

Experimental data of $^{58}\text{Ni}(n, \alpha) ^{55}\text{Fe}$ reaction cross-section for 3,5 - 7,5 MeV neutrons.

Tuesday 13 October 2020 19:15 (20 minutes)

Nickel is a part of most stainless steels, therefore, the cross section for the helium production on the nuclei of the nickel isotopes is significant for evaluation of radiation damages in structural materials of reactors. ^{58}Ni is the main isotope in the natural mixture (^{58}Ni 68.27%, ^{60}Ni 26.10%, ^{61}Ni 1.13%, ^{62}Ni 3.59%, ^{64}Ni 0.91%); therefore, its contribution is one of the determining ones.

The cross-section of the $^{58}\text{Ni}(n, \alpha) ^{55}\text{Fe}$ reaction was obtained on a solid target using new low-background digital spectrometer, based on an ionisation chamber with Frisch grid. The neutron flux was monitored using the ^{238}U fission reaction. Monoenergetic neutrons for the experiment were obtained at the accelerator complex of JSC "SSC RF-IPPE" in the reaction $\text{D}(d,n)^3\text{He}$. The neutron spectrum was monitored during the experiment. The measurements were carried out for neutrons with energies from 3.5 to 7.5 MeV. The obtained data are in satisfactory agreement with the data of other authors and the available theoretical estimation, presented in the main libraries of evaluated data.

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Session Classification: Poster session 2 (part 1)

Track Classification: Section 2. Experimental and theoretical studies of nuclear reactions.