Measurements of the $^{209}Bi(n,\gamma)^{210}gBi$ Reaction Cross Sections at 30 and 520 keV

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The cross sections of the $^{209}Bi(n,\gamma)^{210}gBi$ reaction which leads to the ^{210}Po production in the lead-bismuth coolant were measured at the incident neutron enerigies of 30 and 520 keV. An activation method was adopted with the $^{7}Li(p,n)^{7}$ Be reaction neutron source. The incident neutron flux on a bismuth sample war obtained from the activities of standard gold samples. The α rays from the ^{210}Po nuclei produced in the bismuth sample were measured with a Si surface barrier detector. The derived cross sections were 0.77±0.20 mb at 30 keV and 0.46 ±0.11mb at 520 keV, which were on tenth and one third of the evaluated values in JENDL Activation Cross Section File, respectively.