**Study of the 242Pu + 48Ca and 238U + 48Ca reactions at DGFRS-II**

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This work presents the results of the experiments performed at the FLNR, JINR Superheavy Element Factory (SHE Factory). The experiments were carried out on the basis of the new cyclotron DC-280 with an intensity of accelerated particles of up to 10 pµA [1] and gas filled separator DGFRS-2 [2] and were aimed at study of the 242Pu+48Ca and 238U+48Ca reactions. The main goal of this experiments consisted in determining the capabilities of the SHE Factory for the production and study of new isotopes of known superheavy elements up to Og(*Z*=118), as well as the synthesis of new ones with *Z*>118.

The decay properties of 286Fl and 287Fl, as well as their α-decay products, have been updated from 25 and 69 new decay chains, respectively. Additionally, 16 decay chains of 283Cn were observed in the 238U+48Ca reaction. During the experiment, the maximum intensity of the 48Ca ion beam was 6.5 pµA. The stability of the target was measured at such high intensities. Possibility of existing of isomeric states in the 287Fl consecutive α decays is discussed. A new α line with energy of 100-200 keV lower than the main one at 10.19 MeV was observed for the first time for even-even 286Fl. The maximum cross section of 10.4$\begin{matrix}+3.5\\-2.1\end{matrix}$ pb was measured for the 242Pu(48Ca,3*n*)287Fl reaction.

1. G.G. Gulbekian S.N. Dmitriev, M.G. Itkis, Yu.Ts. Oganessyan, B.N. Gikal et. al. Start-Up of the DC-280 Cyclotron, the Basic Facility of the Factory of Superheavy Elements of the Laboratory of Nuclear Reactions at the Joint Institute for Nuclear Research. // Phys. Part. Nucl. Lett. 16, 866 (2019).

2. Yu.Ts. Oganessian, V.K. Utyonkov et al. DGFRS-2 - a gas-filled recoil separator for the Dubna Superheavy Element Factory. // Nuclear Instruments and Methods in Physics Research (submitted).