The V International Scientific Forum "Nuclear Science and Technologies"

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## Experimental study of the 243Am + 48Ca reaction at the new separator DGFRS-2

We present results of the first experiments aimed at the synthesis of Mc isotopes in the 243Am+48Ca reaction performed at the new gas-filled separator DGFRS-2 on-line to the new cyclotron DC280 at the SHE Factory at JINR. In the first experiment performed at three 48Ca energies of 239, 241, and 244 MeV, we observed fifty five new decay chains of 288Mc and six chains assigned to 289Mc which decay properties are mostly consistent with those measured in previous studies. The  $\boxtimes$  decay of 268Db with an energy of 7.6-8.0 MeV, half-life of  $16 \bullet (+6@-4)$  h, and a branch of  $55 \bullet (+20@-15)\%$  was registered for the first time, and a new spontaneously fissioning isotope 264Lr with a half-life of  $4.9 \bullet (+2.1@-1.3)$  h was identified. The measured cross section of  $17.1 \bullet (+6.3@-4.7)$  pb for the 243Am(48Ca,3n)288Mc reaction was approximately twice the value measured in the previous experiments.

In the second experiment, the new isotope 286Mc with half-life of 20 =(+98@-9) ms and  $\boxtimes$ -particle energy of  $10.71\pm0.02$  MeV was synthesized. The spontaneous fission of 279Rg was observed for the first time in one of the four new decay chains of 287Mc. Excitation function of the reaction was measured at three 48Ca energies of 242, 250, and 259 MeV which resulted in the first observation of the 5n-evaporation channel of 0.5 = (+1.3@-0.4) pb.

The transmission of the new separator DGFRS-2 was found to be about two times larger than that of DGFRS, which makes it a promising experimental facility for continuing research of superheavy nuclei.

## Section

Nuclear physics (Section 1)

**Primary author:** Dr VOINOV, Alexey (JINR)

Presenter: Dr VOINOV, Alexey (JINR)

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