

FORMATION OF NEUTRON-DEFICIENT HEAVY NUCLIDES IN He-3 INDUCED REACTION AT INTERMEDIATE ENERGIES

Gromova E.¹, Jakovlev V.A.¹, Rubchenya V.A.^{1,2,3}, Aaltonen J.⁴, Helariutta K.⁴,
Salminen-Paatero S.⁴, Penttilä H.², Rissanen J.², Saastamoinen A.²

¹*V.G.Khlopin Radium Institute, St.-Petersburg, Russia;*

²*Department of Physics, University of Jyväskylä, Finland;*

³*Faculty of Physics, S.-Petersburg University, Russia;*

⁴*Department of Chemistry, Helsinki, Finland*

E-mail: jakovlev@khlopin.ru

The ³He induced reactions with the actinides isotopes are promising tool for production of neutron-deficient heavy nuclides which are particularly great of interest as tracers in the environmental studies. Highly enriched 1 mg/cm² thick ²³⁵U targets were irradiated with 20.4 – 42.0 MeV ³He ions from Accelerator Laboratory of University of Jyväskylä, Finland. The irradiated targets were measured with gamma and alpha spectrometers. Then the targets were dissolved to separate chemically Pu and Np products from the fission product and target material. The chemical yields were determined by measuring the activities of ²³⁴Np and ²³⁶Pu before and after the chemical separation. Thus, the earlier unknown excitation functions for ^{234,235}, ²³⁶Pu and ^{234,235}, ^{236m}Np nuclides were obtained. The experimental data were analyzed in the framework of the theoretical model with inclusion the nuclear friction in fission channel and pre-equilibrium processes [1].

1. V.A.Rubchenya // Phys. Rev. C, 2007. V.75. 054601.