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Determination of the valence state of ^{237}U , obtained in the photonuclear reaction $^{238}\text{U} (\gamma, n) ^{237}\text{U}$ using nanostructured material.

^{237}U was obtained in the $^{238}\text{U} (\gamma, n) ^{237}\text{U}$ reaction in the electron accelerator - microtron MT-25 of the Flerov Laboratory of Nuclear Reactions (FLNR JINR, Dubna). The method of recoil atoms capture with application to the nanostructure material –hydrous manganese dioxide (cryptomelane-type) in a solid-solid system was used for the separation of ^{237}U and ^{238}U . The change of the distribution coefficient of the isotope ^{237}U between solution and sorbent in dependence on the acidity of nitrate solutions was studied. These experiments show that most of the ^{237}U is in the +4 valence state.

Primary author: Ms GUSTOVA, Marina (senior engineer)

Co-authors: Dr BELOV, Anatoly (head of a group); Prof. MASLOV, Oleg (leading scientist)

Presenter: Ms GUSTOVA, Marina (senior engineer)

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