Activation measurements of multinucleon transfer cross sections in ^{48}Ca+Au and ^{40}Ca+Au reactions at energies near the Coulomb barrier

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In this work presents the results of activation measurements of the cross sections for the formation of target-like fragments in multinucleon transfer (MNT) reactions in collisions of ^{48}Ca and ^{40}Ca nuclei with a ^{197}Au target nucleus at energies close to the Coulomb barrier. The main attention is paid to the study of the effect of neutron excess in ^{48}Ca on the characteristics of MNT reactions in comparison with the ^{40}Ca isotope. The experiments were carried out by the method of activation analysis followed by γ-spectrometric determination of the cross sections of the reaction products [1]. The data obtained demonstrate differences in the probabilities of formation of target-like products in reactions with ^{40}Ca and ^{48}Ca projectiles, which indicates a significant effect of neutron excess on the dynamics of MNT processes near the Coulomb barrier. The presented results are compared with theoretical calculations [2][3] and discussed in the context of the mechanisms of nucleon transfer and the synthesis of neutron-rich nuclei [4].

Acknowledgements: This research has been funded by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant No. AP19577048).

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