

## 7. PECULIARITIES IN THE INTERACTION OF ${}^6\text{He}$ WITH ${}^{197}\text{Au}$ AND ${}^{206}\text{Pb}$ AT ENERGIES CLOSE TO THE COULOMB BARRIER

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Excitation functions for evaporation residues in the reactions  ${}^{197}\text{Au}({}^6\text{He}, xn){}^{203-xn}\text{Tl}$ , where  $x = 2 - 7$ , and  ${}^{206}\text{Pb}({}^6\text{He}, 2n){}^{210}\text{Po}$ , as well as for neutron transfer reactions for the production of  ${}^{196}\text{Au}$  and  ${}^{198}\text{Au}$  in the interaction of  ${}^6\text{He}$  with  ${}^{197}\text{Au}$  were measured.  ${}^6\text{He}$  beam was obtained from the accelerator complex for radioactive beams DRIBs (JINR). The energy of the incident beam was about 10 MeV/A and the intensity reached  $2 \cdot 10^7$  pps. The stacked foil technique was used directly in the beam extracted from the cyclotron or in the focal plane of the magnetic spectrometer MSP-144. The identification of the reaction products was done by their radioactive  $\gamma$ - or  $\alpha$ -decay. Unusually large cross section was observed below the Coulomb barrier for the production of  ${}^{198}\text{Au}$  in the interaction of  ${}^6\text{He}$  with  ${}^{197}\text{Au}$ . Possible mechanisms of formation and decay of transfer reaction products are discussed. An increase in the cross section was observed for the fusion reaction with the evaporation of two neutrons compared to statistical model calculations. The analysis of the data in the framework of the statistical model for the decay of excited nuclei, which took into account the sequential fusion of  ${}^6\text{He}$  has shown good agreement between the experimental and the calculated values of the cross sections for the case of sub-Coulomb-barrier fusion in the  ${}^{206}\text{Pb} + {}^6\text{He}$  reaction.