OBSERVATION OF NEW TRANSURANIUM ISOTOPES IN MULTINUCLEON TRANSFER REACTIONS

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Recently, we reported the observation of several new isotopes with proton numbers $Z \geq 92$ in low-energy collisions of $^{48}Ca + ^{248}Cm$. The peculiarity is that the nuclei were produced in deep inelastic multinucleon transfer reactions, a method which is presently discussed as a possible new way to enter so far unknown regions in the upper part of the Chart of Nuclides. For separation of the transfer products we used a velocity filter, the Separator for Heavy Ion reaction Products SHIP at GSI. The resulting strong background suppression allowed us to detect nuclei with cross-sections down to the subnanobarn scale. The isotope identification was performed via the alpha decay chains of the nuclei in the focal plane of SHIP. Beside the new isotopes we identified about 100 further target-like transfer products and determined their cross-sections. Our results together with previous measurements allow a discussion if multinucleon transfer reactions are a practicable way to produce new heavy and superheavy nuclei.