THE SYNTHESIS OF SUPERHEAVY NUCLEI IN THE $^{48}Ca + ^{244}Pu$ REACTION: $^{288}114$

Yu. Ts. Oganessian, V. K. Utyonkov, Yu. V. Lobanov, F. Sh. Abdullin, A. N. Polyakov, I. V. Shirokovsky, Yu. S. Tsyganov, G. G. Gulbekian, S. L. Bogomolov, B. N. Gikal, A. N. Mezentsev, S. Iliev, V. G. Subbotin, A. M. Sukhov, O. V. Ivanov, G. V. Buklanov, K. Subotic, M. G. Itkis
Joint Institute for Nuclear Research, 141980 Dubna , Russia
K. J. Moody, J. F. Wild, N. J. Stoyer, M. A. Stoyer and R. W. Lougheed
University of California, Lawrence Livermore National Laboratory, Livermore, California 94551, U S A

In the bombardment of a ^{244}Pu target with ^{48}Ca ions, we observed two identical decay sequences of genetically linked events, each consisting of an implanted heavy atom, two subsequent a-decays, and terminated by a spontaneous fission. The measured a-energies and corresponding half-lives of the sequential chain members were: E_α=9.84 MeV ($T_{1/2}$=1.9 s) and 9.17 MeV ($T_{1/2}$=9.8 s); for the spontaneous fission ($T_{1/2}$=7.5 s), the total energies deposited in the detector array were 213 and 221 MeV. The decay properties of the synthesized nuclei are consistent with the consecutive a-decays originating from the parent even-even nucleus $^{288}114$, produced in the 4n-evaporation channel with a cross section of about 1 pb. $^{288}114$ and $^{284}112$ are the heaviest known a-decaying even-even nuclides, following the production of ^{260}Sg and ^{266}Sg (Z=106) and the observation of one a-decay of ^{264}Hs (Z=108). The observed radioactive properties of $^{288}114$ and the daughter nuclides match the decay scenario predicted by the macroscopic-microscopic theory.