

SEARCH FOR SUPERHEAVY ELEMENTS IN THE REACTION $^{238}\text{U} + ^{63,65}\text{Cu}$

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According to calculations of Nix and others, the formation of superheavy elements might occur in heavy-ion reaction systems such as the one under investigation in the present work i.e. , $^{238}\text{U} + ^{63,65}\text{Cu}$ at 9.6 MeV/nucleon. Since previous experiments have indicated that upper limits to the production cross-section for superheavy elements are extremely low, we have carried out two rather long irradiations of 27 h and 42 h, respectively, at the University of Manchester LINAC. The first run has already been reported on in the literature. In the case of the second run, after chemical separation into HgS, CdS, and $\text{La}(\text{OH})_3$ fractions, the samples were assayed simultaneously and continuously over a period of 6 months for alpha- and spontaneous-fission activity, using Si surface-barrier detector. Each sample was at the same time mounted on mica, for the purpose of scanning for fission tracks at a later date. No indications from the data have so far been found that superheavy elements were produced.