

Experimental study and simulation of the residual activity induced by high-energy argon ions in copper

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Nuclear Instruments and Methods in Physics Research B 268 (2010) 573-580

The paper presents new experimental results and FLUKA-simulations of residual activation induced by high-energy argon ions in copper. It follows the previous residual activation studies performed at GSI Helmholtzzentrum für Schwerionenforschung in Darmstadt with uranium ions as a preparatory work for constructing the FAIR facility. Copper samples were irradiated by 1 GeV/u and 500 MeV/u ^{40}Ar ions and investigated by gamma-ray spectroscopy. The samples were irradiated in the stacked-foil geometry. The isotopes with dominating contribution to the total residual activity were identified and their partial activities were quantified. Depth-profiling of the partial residual activities of all identified isotopes was performed by measurements of individual target foils. The experimental results were compared with simulations by the FLUKA-code. A satisfactory agreement between the experiment and the simulations was observed.