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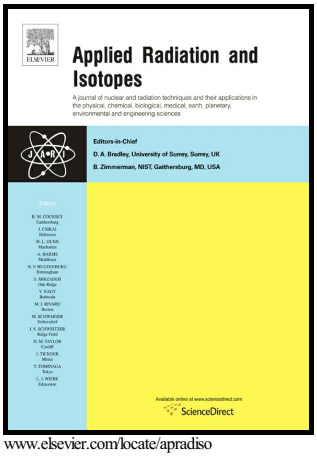

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Experimental study and simulation of ^{63}Zn production via proton induce reaction

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Abstract

The ^{63}Zn was produced by16.8 MeV proton irradiation of natural copper. Thick target yield for ^{63}Zn in the energy range of 16.8 $\rightarrow$12.2 MeV was 2.47±0.12 GBq/μA.h. Reasonable agreement between achieved experimental data and theoretical value of thick target yield for ^{63}Zn was observed. A simple separation procedure of ^{63}Zn from copper target was developed using cation exchange chromatography. About 88±5% of the loaded activity was recovered. The performance of FLUKA to reproduce experimental data of thick target yield of ^{63}Zn is validated. The achieved results from this code were compared with the corresponding experimental data. This comparison demonstrated that FLUKA provides a suitable tool for the simulation of radionuclide production using proton irradiation.

Keywords: ^{63}Zn production, Radiochemical separation, Chromatography, FLUKA