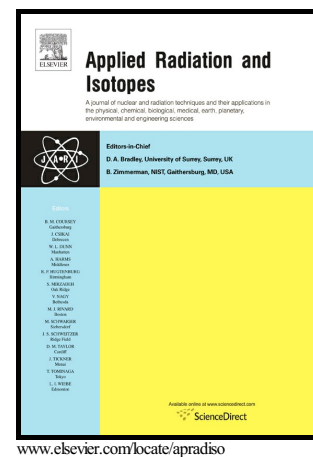


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## Experimental study and simulation of $^{63}\text{Zn}$ production via proton induce reaction

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### Abstract

The  $^{63}\text{Zn}$  was produced by 16.8 MeV proton irradiation of natural copper. Thick target yield for  $^{63}\text{Zn}$  in the energy range of 16.8  $\rightarrow$  12.2 MeV was  $2.47 \pm 0.12$  GBq/ $\mu\text{A.h}$ . Reasonable agreement between achieved experimental data and theoretical value of thick target yield for  $^{63}\text{Zn}$  was observed. A simple separation procedure of  $^{63}\text{Zn}$  from copper target was developed using cation exchange chromatography. About  $88 \pm 5\%$  of the loaded activity was recovered. The performance of FLUKA to reproduce experimental data of thick target yield of  $^{63}\text{Zn}$  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:**  $^{63}\text{Zn}$  production, Radiochemical separation, Chromatography, FLUKA

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