Fabrication of backed ^{94}Zr target for RDM lifetime measurement

C. K. Gupta[1], Aman Rohilla[1], S.R. Abhilash[2], D. Kabiraj[2], R.P. Singh[2], D. Mehta[3] and S.K. Chamoli[1]

[1]*Department of Physics and Astrophysics, University of Delhi , Delhi - 110007, INDIA*
[2]*Inter University Accelerator Centre, Aruna Asaf Ali Marg, New Delhi - 110067, INDIA*
[3]*Department of Physics, Panjab University, Chandigarh - 160014 , INDIA*

Abstract

An enriched ^{94}Zr target of thickness 520 μg/cm^2 has been prepared by using electron beam deposition method at Inter University Accelerator Center (IUAC), New Delhi. Tantalum of thickness 3.5 mg/cm^2 was used as a backing. A very thin layer (~ 35 μg/cm^2) of gold was made over ^{94}Zr layer to protect it from peeling off and also to protect the outer layer of zirconium from environment. 143 mg of pelletized enriched material was utilized for the fabrication of ^{94}Zr targets. The target has been successfully used in a test run of Recoil Distance Doppler shift Method (RDM) lifetime measurement experiment at IUAC. The X-ray fluorescence (XRF) method [7] of thickness measurements was used to measure the thicknesses of target layers as well as impurities present in the target.

References

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