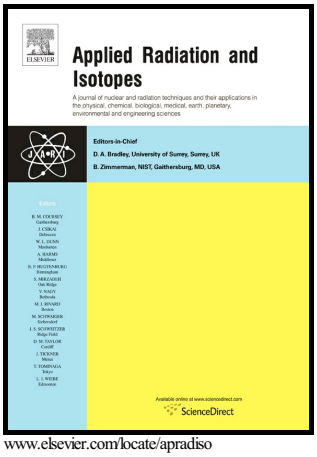

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Excitation function of proton induced nuclear reaction on strontium: special relevance to the production of ^{88}Y

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ABSTRACT

Excitation functions were measured by the activation method using stacked-foil technique for the ^{nat}Sr(*p*,*xn*)^{88,87m,g,86m,g}Y reactions up to 18 MeV. The experimental results were compared with the theoretical data from EMPIRE-3.2 code and TENDL.

Integral yields of ^{88,87m,g,86m,g}Y were estimated based on the measured cross sections. The optimum energy range for the production of the important isotope ^{88}Y is *E*p = 16→11 MeV, ^{88}Y yield amounts to about 3 MBq/μAh.

***Keywords*: Excitation Function/ Stacked-Foil Technique/ Natural Strontium Targets/ Nuclear Model Calculations/ Integral Yield.**

1. Introduction

The positron emitting ^{86}Y ($T_{1/2}$ = 14.7 h, β^+ (33%), $E_{\beta+}$ = 1.2MeV) has proved to be used in Positron Emission Tomography (PET). For its production several nuclear processes were considered and the reaction ^{86}Sr(*p*, *n*)^{86}Y E_{th}=6 MeV was found to be most suitable (Rösch et al. 1993b; Sadeghi et al. 2009) , because it could be used at a small-sized cyclotron. Many studies was done by Rösch et al. (Rösch et al. 1993a) to produce