

Investigation of natTi(p,x) Reaction and Measurement of Excitation Functions up to 45 MeV

Thursday, 17 November 2016 09:30 (30 minutes)

Natural titanium activated with high energy proton beam results production of some valuable radionuclides applicable in medicine and industry. In this study we measured the production cross-sections of ^{43}Ti , $^{44\text{m}}\text{Ti}$, $^{44\text{g}}\text{Ti}$, ^{46}Ti , ^{47}Ti , $^{48\text{Sc}}$, $^{48\text{V}}$ radionuclides from their respective threshold to 45 MeV in natTi(p,x) reaction. Well-known stacked-foil activation technique and off-line gamma-ray spectrometry system was applied in the study. The sample was activated using the external beam line of MC-50 cyclotron at Korea Institute of Radiological and Medical Sciences (KIRAMS), Korea. The measured results were compared with the literature data as well as with the model calculations using TENDL-2015 library based on the TALYS 1.8 code. The integral yields for thick target of the investigated radio-nuclides was also deduced from the measured excitation functions. The study is beneficial for those involved in radioisotope production and is helpful to modify the nuclear model calculations.

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Session Classification: Session 8

Track Classification: Plenary