

Measurement of Proton-Induced Reaction Cross-Sections on Natural Titanium and Vanadium with 100 MeV Protons

Thursday, November 14, 2024 1:00 PM (1h 30m)

Abstract: This study investigates the cross-sections of proton-induced nuclear reactions on natural titanium (natTi) and natural vanadium (natV) using a 100 MeV proton beam. The experiments were conducted over an energy range from 97.5 MeV to 62 MeV. The primary objective was to measure the production cross-sections of various isotopes, including ^{43}K , $^{44}\text{m,46,47,48}\text{Sc}$, and ^{48}V , which were commonly observed from both target materials. Additionally, the isotope ^{51}Cr was specifically measured from the natV samples. The cross-sections were determined using the stacked-foil activation technique followed by high-resolution gamma-ray spectrometry to identify and quantify the radioactive products. The obtained cross-sectional data are crucial for enhancing the understanding of nuclear reaction mechanisms and for applications in fields such as nuclear medicine, radiation shielding, and material science. The results were also compared with existing nuclear data libraries and theoretical models to validate the experimental methodology and to provide comprehensive nuclear data for these reactions.

Acknowledgement: This work was supported by the National Research Foundation of Korea (NRF) grant (No.2021M2E7A1079041) and the KOMAC (Korea Multi-purpose Accelerator Complex) operation fund of KAERI (Korea Atomic Energy Research Institute), which is funded by the Korean government-MSIT (Ministry of Science and ICT).

Paper submission Plan

Best Presentation

Contribution track

ICABU WG4. Applications of Particle Beams

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Session Classification: ICABU Poster Session

Track Classification: ICABU: ICABU WG4. Applications of Particle Beams