Abstract Submitted
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Systematic measurements of proton-induced reactions on enriched molybdenum[1] EDWARD LAMERE, GWENAELLE GILARDY, ZACH MEISEL, MICHAEL MORAN, MICHAEL SKULSKI, ANTONIO SIMONETTI, MANOEL COUDER, University of Notre Dame — Between 2008 and 2010, shortages in the world-wide supply of ^{99}Mo highlighted weaknesses in the current fission-based production method of ^{99m}Tc, a critical medical isotope. This crisis sparked interest in developing alternative production methods, including the direct production of ^{99m}Tc from proton-induced reactions on enriched ^{100}Mo targets. One complication with this method is that ^{99m}Tc must be chemically extracted from the irradiated target. Therefore radiopharmaceuticals will contain a mixture of all Tc-species produced from the proton bombardment, affecting radiochemical purity, specific activity and total production yield of ^{99m}Tc—factors critical for the feasibility of this production method. Reactions on trace impurities in the enriched targets have been shown to impact these factors dramatically. Precise cross-section measurements for all Mo + p reactions that lead to Tc or Mo species are required for proper assessment of this production technique. Cross-section measurements for the main reaction of interest, ^{99m}Tc(p,2n), have been performed in recent years, however, other reactions producing Tc have been mostly neglected. We will introduce a systematic study of proton-induced reactions on 92, 94-98, 100 Mo currently being performed at Notre Dame. First results on ^{96}Mo + p reactions will be presented.

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