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Study of (p,x) and (γ,x) reactions on natural Molybdenum

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Since 2010 the nuclear medicine community has been expressing global concern for the shortage of 99mTc supply based on fission production of 99Mo from highly enriched uranium to produce 99Mo/99mTc generators. As an alternative to reactor based 99Mo/99mTc generator technology, many research groups have suggested the direct production of 99mTc through accelerators. There are many production methods of 99Mo/99mTc using accelerators.
Production of 99Mo/99mTc through proton induced reaction on highly enriched 100Mo looks promising. But it is also possible to produce 99Mo/99mTc by natMo. With this method production costs of 99Mo/99mTc may be reduced, however more radioactive impurities of other Mo isotopes may be produced. At 9-26 MeV energy range there is a large discrepancy in the data available for the production of Radionuclides impurities, hence this work was conducted to contribute data in reducing the discrepancy. In this work, we studied target yield and the cross-section for the production of long-lived Radionuclides produced in the natMo target at the energy range 19-26 MeV. Target yield was derived using the measured activity of produced radionuclides. The total cross section for all isotopes produced is presented and compared with the previously available data. Present results showed good agreement with most of the earlier reported data.
Preliminary results of production possibility of 99Mo using SOLARIS National Synchrotron Radiation Centre, Cracow, Poland will be discussed.

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