

## Application for the student session

Presentation title:

Neutron and photon induced cross section measurements for the production of medical isotopes of strontium

Abstract:

The cross sections of the  $^{88}\text{Sr}(n,2n)^{87}\text{Sr}$ ,  $^{88}\text{Sr}(n,p)^{88}\text{Rb}$ ,  $^{88}\text{Sr}(n,\alpha)^{85}\text{Kr}$ ,  $^{86}\text{Sr}(n,2n)^{85}\text{Sr}$ ,  $^{86}\text{Sr}(n,2n)^{85}\text{Srg}$  and  $^{84}\text{Sr}(n,2n)^{83}\text{Sr}$  nuclear reactions at  $14.77 \pm 0.17$  MeV neutron energy and the average cross sections of the  $^{88}\text{Sr}(\gamma,n)^{87}\text{Sr}$  and  $^{86}\text{Sr}(\gamma,n)^{85}\text{Sr}$  nuclear reactions at bremsstrahlung of 15 MeV endpoint energy were measured with activation method and offline gamma-ray spectroscopy. The measured cross sections were reported with a detailed covariance analysis for uncertainty and correlation coefficients. The experimental results were compared with the previously reported experimental data from the EXFOR database and the evaluated data from the TENDL-2019 library. Statistical model calculations were performed with the latest TALYS-1.95 code with optimized input parameters to better reproduce reported experimental data. The measured cross sections were found to be in good agreement with the literature and theoretical calculations. These results highlight the alternate production routes for the medical radioisotopes of  $^{87}\text{Sr}$  and  $^{85}\text{Srg}$ .

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