

Evaluation of Photonuclear Data of Mo, Zn, S and Cl for Medical Application

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abstract

As part of IAEA CRP on "Compilation and evaluation of photonuclear application", we evaluated photoproduction data of Mo, Zn, S and Cl isotopes for medical use and biological application. Available experimental data were collected and their discrepancies were analyzed to select or reconstruct the representative data set. The photoabsorption cross sections were then evaluated by applying the Giant Dipole Resonance (GDR) model for the energies below about 30 MeV, and the quasi-deuteron model for energies below 140 MeV, which is the threshold for pion production. The resulting representative photoabsorption data were given as input for the theoretical calculations for the emission process of light nuclei including neutron, proton, deuteron, triton, He-3, alpha particles and gamma rays by use of the Hauser-Feshbach and the preequilibrium model. Appropriate optical model parameters were applied to prepare the transmission coefficients for the Hauser-Feshbach statistical model.

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