Radiation from Relativistic Electrons in Periodic Structures "RREPS-23" & Electron, Positron, Neutron and X-ray Scattering under External Influences "Meghri-23"



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Proton Induced Reactions on 114Sn and 120Sn Targets

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Cross sections of proton-induced reactions on tin up to energies of 18 MeV using the stacked-foil activation technique have been measured. Experimental values for $114Sn(p,\alpha)111In$, 114Sn(p,pn)113Sn, 114Sn(p,2n)113Sb, 120Sn(p,n)120m, gSb, $120Sn(p,\alpha)117m$, gIn reactions cross-sections are reported.

A stack of enriched 114Sn and 120Sn foils was irradiated using 18 MeV proton beam provided by compact medical cyclotron IBA Cyclone18/18 (Yerevan). The stack was composed of 6 blocks of natCu-114Sn-natCu-120Sn layers where tin foils were 20 to 40 μ m thick and copper foils were 20 μ m thick. The irradiation was 5 min long with a collimated 1 μ A proton beam of the same diameter as the target (1.2 cm). After the irradiation the foils in the stack were detached, and the γ -spectra of each target were measured with a high-purity germanium detector GEM15P4-70. Residual nuclei were identified by their half-lives and the energies of characteristic gamma lines.

Measured cross sections have been compared to existing experimental values and numerical calculations based on Talys1.95.

Our data are in good agreement with all previous experiments, and also with Talys1.95 results except for 120Sn(p, α)117m,gIn reactions where the numerical calculations are shifted to higher energies.

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