

List of Tables

1.1	List of nuclear reactions used to produce neutrons [55].	11
1.2	The spectroscopic data of selected neutron and proton induced reactions are considered in the present work.	15
2.1	The γ ray energies of ^{152}Eu used for HPGe detector calibration. . . .	30
3.1	Types of tallies given in MCNP.	52
4.1	Neutron flux monitor reactions are listed with their spectroscopic details [6].	58
4.2	Irradiation experiment details.	60
4.3	Spectroscopic details of chosen reactions for the present study.	62
4.4	Major uncertainties included in the measured cross section results. . . .	69
4.5	Comparison of the presently measured experimental data with the theoretical predictions of TALYS 1.9.	75
5.1	Isotopic abundance of samples, energy level of the resultant nuclei, threshold energy of reaction, product nucleus, spin, decay mode and half life of the product nucleus, and γ -energies with relative intensities of proffered reactions.	87

5.2	Cross sections and astrophysical S factors for the $^{114}\text{Cd}(\text{p}, \gamma)^{115\text{m}}\text{In}$, $^{114}\text{Cd}(\text{p}, \text{n})^{114\text{m}}\text{In}$, and $^{112}\text{Cd}(\text{p}, \gamma)^{113\text{m}}\text{In}$ reactions.	101
5.3	Experimentally measured cross sections for $^{110}\text{Cd}(\text{p}, \text{n})$ & $^{110}\text{Cd}(\text{p}, 2\text{n})$ reactions.	107
6.1	The empirical formula for (d, 3n) reactions at 20 ± 1.5 MeV [19]. . .	117