

## Measurement of Rayleigh Scattering Cross-Section of $^{60}\text{Nd}$ K X-Rays Elements with $26 \leq Z \leq 90$

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**Abstract :** Rayleigh scattering differential cross sections have been measured for the 36.84 keV ( $^{60}\text{Nd}$   $K\alpha_2$ ), 37.36 keV ( $^{60}\text{Nd}$   $K\alpha_1$ ) and 42.27 keV ( $^{60}\text{Nd}$   $K\beta_{1,3}$ ) X-rays. These measurements have been done in 44 elements with  $22 \leq Z \leq 90$  at an angle of 1390. The measurements are performed by using a radiation source consisting of an annular  $^{60}\text{Nd}$  foil excited by the 59.54 KeV  $\gamma$ -ray photons from  $^{241}\text{Am}$  radioactive source. The  $\text{Nd}$   $K\alpha_2$ ,  $K\beta_{1,3}$  X-ray photons from the  $^{60}\text{Nd}$  annular foil (secondary photon source) are made to scatter from the target and the scattered photons are detected using Canberra made low energy Germanium (LEGe) detector. The measured Rayleigh scattering cross sections are compared with the theoretical MF, MFASF and the SM values. The noticeable deviations are observed from the MF, MFASF and SM values for 36.84 keV ( $^{60}\text{Nd}$   $K\alpha_2$ ), 37.36 keV ( $^{60}\text{Nd}$   $K\alpha_1$ ) and 42.27 keV ( $^{60}\text{Nd}$   $K\beta_{1,3}$ ) X-rays.

**Keywords :** Photon-electron interaction, Rayleigh scattering, X-ray fluorescence, X-ray

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