

## Abstract

The slowing down of Cu, Si, Al and F **heavy ions** over the 0.09–0.51 MeV/nucleon energy range in thin Nickel (Ni) foil has been investigated by using the Heavy Ion Elastic Recoil Detection Analysis (HI-ERDA) technique coupled with a time of flight (ToF) **spectrometer**. This experimental setup generated a significant amount of energy loss data, which allowed the determination of stopping force of  $^{63}\text{Cu}^{7+}$  heavy ions in Nickel at low **projectile** energies. The obtained stopping force results were compared with semi-empirical calculations by Ziegler's Stopping and Range of Ions in Matter (SRIM) code, and **ab initio calculations** by Grande and Schiewietz's Convolution approximation for swift Particles (CasP) code. The aim of such comparison was to assess the reliability and accuracy of the existing energy loss formulations, in the light of the present experimental results. Good agreement was found between the experimental stopping force data for the reported ions velocities and SRIM predictions. For CasP, the agreement is fairly good from  $\sim 0.15$  MeV/n onwards.