

Abstract

We have determined continuous stopping power of heavy ions in thin Formvar foil for ^{28}Si , ^{27}Al and ^{24}Mg ions over an energy range of (0.1–0.5) MeV/nucleon. Heavy Ions Elastic Recoil Detection Analysis (HI-ERDA) technique coupled with time of flight (ToF) spectrometer has been used to measure energy loss of charged particles in this thin absorber. Lindhard, Scharff and Schiott (LSS) theory compared with the corresponding determined stopping values in Formvar, shows significantly large deviations. However, a novel semi empirical expression has been proposed here and tested for better stopping power calculations at low velocity in the ion energy domain of LSS theory for ^{28}Si , ^{27}Al and ^{24}Mg ions crossing thin Formvar foil. The results were compared to the obtained experimental stopping power data, predictions of LSS theory and also to those generated by SRIM-2010 computer code. The obtained results exhibit good agreement with experimental data