

Charge fraction measurements for 2.4-35 keV Ar^{q+} (q=2-13) projectiles backscattered from Au(110)

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Abstract

We report on measurements of absolute scattered projectile charge fractions for Ar^{q+} ions (q=2-13) with incident energies in the range 2.4-35 keV, that have been 120 degrees backscattered from Au(110) in quasi-binary collisions. Use of a time-of-flight technique that incorporates a biased drift region permitted full separation of all scattered charged states, including neutrals. At fixed projectile energy, the scattered ion fractions are relatively independent of incident charge state until the projectile L-shell is opened, at which point large enhancements are observed, amounting for 2+ scattered ions to more than a factor of twenty. For fixed projectile charge state, the scattered neutral fractions all decrease monotonically with increasing energy, with the higher (q>1) charge fractions showing a corresponding increase, while the q=1 fractions initially rise to an extremum and then fall off with yet higher incident energies. Comparisons are made with the recent experimental results of Pesic et al. (2000). [Conference Paper; 11 Refs]

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