

Abstract Submitted
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Relative elemental and meson production rates in the collision of space crafts with cosmic particles M.S. SABRA, F.B. MALIK, Southern Illinois University Carbondale — A modified statistical model that includes final state interaction between two binary fragments in the collision of a target nucleus with hydrogen and helium has been successful in explaining the existing data of alpha induced fragmentation of ^{28}Si , a major component in semi-conductors instruments. Proton induced collision of ^{16}O will be presented along with calculated production rates of all allowed elements and their isotopes. The observed data indicates that the fragments are pre-dominantly emitted in excited states, and have broad kinetic energy distributions, which are accounted for by this theory but not by the usual evaporation models. The nature of the potentials between two emerging fragments in the final state and their level density functions are the important factors in determining their kinetic energy spectra and degree of excitations. The collision between materials of space crafts and cosmic particles leads to copious emission of hot nuclei, a factor that must be added to the existing data base needed for developing protection against space radiations. A preliminary study of the possibility of meson productions and the emission of the residual hot-nuclei in the process that could subsequently emits further hot nuclei will also be discussed.

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