Abstract Submitted
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Electron emission from condensed-phase targets induced by fast ion transmission[1] R.A. MCLAWHORN, S.L. MCLAWHORN, M. DINGFELDER, L.H. TOBUREN, J.L. SHINPAUGH, East Carolina University, K.D. CARNES, Kansas State University — Doubly differential electron emission yields from thin foil targets induced by fast ion impact are presented. Electron energy spectra were measured as a function of emission angle for transmission of 2 and 6 MeV protons and 1 MeV/u fluorine ions through 1-μm Al, Au, and Cu foils and thin layers of condensed gases frozen on a copper-foil substrate at 40 K. Electron time-of-flight energy analysis was used to focus on the low-energy range of the spectrum where electron emission is most sensitive to the phase of the target. Absolute doubly differential electron emission yields for thin films of amorphous solid water are compared to results from Monte Carlo track structure simulations for electron transport in liquid water. While the model shows excellent agreement with the experimental data for electron energies greater than approximately 60 eV, discrepancies are found at low electron energies. Since low-energy electrons dominate the emission spectrum, this can have important implications for modeling radiation damage in biological systems.

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