

Abstract Submitted
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Electron Capture Processes Following Collisions of He²⁺ Ions with Molecular Targets O. ABU-HAIJA, E.Y. KAMBER, S.M. FERGUSON, Physics Dept., Western Michigan University, Kalamazoo, MI 49008 — Energy-gain spectra, absolute state-selective and total cross sections have been measured for single-electron capture processes in collisions of He²⁺ ions with O₂, H₂O, CO₂, N₂, and NH₃ at impact energies between 100 eV and 1600 eV and scattering angles between 0° and 6° using the translational energy-gain spectroscopy (TES) technique. As apparent from the translational energy-gain measurements, single-electron capture (SEC) from O₂ and H₂O proceeds by both dissociative and non-dissociative channels, whereas for N₂ and CO₂ only dissociative SEC has been observed. However, for NH₃ the non-dissociative SEC channel is found to be predominantly populated. Total cross sections have also been compared with available measurements and theoretical calculations based on Landua-Zener model and Demkov model.

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