

Abstract Submitted
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Electron and Positron Scattering with a Few Alkyne Molecules - Theoretical Cross sections U R PATEL, Gandhinagar Institute of Technology, K N JOSHIPURA, Retired Professor, Sardar Patel University, H N KOTHARI, S M Panchal Science College, Talod, Gujarat, India — Electron molecule scattering processes play an important role in the understanding of the electron driven physiochemical phenomena in diverse environments such as biological media, planetary atmospheres, interstellar clouds and plasmas. In modeling and simulating effects induced by electrons traversing through matter, the relevant cross section data are required as an input. An alternative probe, positron has also been used for the similar study of atoms, molecules and matter in bulk. Interaction of positrons with atoms and molecules differs from electron interactions due to opposite sign of charge and absence of exchange potential. In the present paper, our aim is to apply an identical theoretical method^{1,2} to electrons as well as positrons interacting with alkyne molecules like acetylene ($\text{HC}\equiv\text{CH}$), 1- Butyne ($\text{HC}\equiv\text{C}-\text{CH}_2\text{CH}_3$) and Propyne ($\text{HC}\equiv\text{C}-\text{CH}_3$). We have carried out calculations of total scattering cross sections by starting with complex potential approach followed by the solution of the Schrodinger equation using numerical method. Ionization cross sections are deduced as in^{1,2}. Comparisons have been made with available theoretical and experimental results for both electron (e^-) and positron (e^+). The study will be extended to alkanes and alkenes. ¹U R Patel, K N Joshipura, H N Kothari and S H Pandya *J. Chem. Phys.* **140** 044302 (2014) ²H N Kothari and K N Joshipura *Pramana- J. Phys.* **79** 435(2012)

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