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Perfluorination Effect through Computation of Electron Scattering Cross sections for Hexafluoroacetone (HFA) and Acetone Molecules

U R PATEL, Gandhinagar Institute of Technology, H N KOTHARI, S M Panchal Science College, Talod, K N JOSHIPURA, Sardar Patel University, 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. In present work we discussed a semi empirical approach i.e. Complex Scattering Potential method to obtain various electron scattering cross sections for molecules. The method has been tested for wide flavors of atoms and molecules¹⁻³. We report total elastic (Q_{el}), total inelastic (Q_{inel}) and total cross sections ($Q_T = Q_{el} + Q_{inel}$) for $(CF_3)_2CO$ and $(CH_3)_2CO$. Further total ionization cross sections (Q_{ion}) are extracted from total inelastic (Q_{inel}) cross sections. Calculated results are compared with measured/calculated cross sections of Szmytkowski *et. al*⁴. Present results have good accord with available results and Perfluorination effect is discussed. ¹Patel *et. al* J. Chem. Phys. **140** 044302 (2014), ²Joshi-pura *et.al* Phys. Rev. A, **69** (2004) 022705, ³Joshi-pura *et. al*, Phys. Lett. A, **373** (2009) 2876, ⁴Szmytkowski *et. al* J. Phys. B: At. Mol. Opt. Phys. **44** (2011) 205202.

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