Abstract for an Invited Paper
for the GEC07 Meeting of
The American Physical Society

Low Energy Elastic Scattering of Electrons from Polyatomic Molecules

MURTADHA A. KHAKOO, Physics Department, California State University, Fullerton, CA 92834

Measurements and calculations of the elastic scattering of electrons from “large” polyatomic molecules, e.g. alcohols, CH₃OH and C₂H₅OH are presented. These measurements are made possible by using a modified form of the relative flow method which uses a thin aperture source of target gas, instead of the conventional tube sources used in the past. The aperture source provides an angular distribution of gas which is independent of the pressure behind the source, provided the gas mean-free path does not exceed the aperture thickness. This property has been tested using C₂H₂, N₂ and He [1]. The experimental data were taken at incident energies of 2eV, 5eV, 10eV, 15eV, 20eV, 30eV, 50eV and 100eV. The theory uses the variational multi-channel Schwinger method with polarization effects [2], and very good agreement between experiment and theory is observed in general. The talk will focus on the experimental implementation of the modified relative flow method and its validity.


1Funded by the National Science Foundation, Atomic, Molecular and Optical Physics Division under Collaborative Grant Number 0653452 with Drs. B. V. McKoy and C. Winstead, Caltech University, Pasadena, CA 91125.