

A comparative study for elastic electron collisions on the C_2N_2 and their isomers CNCN, CCNN and CNNC

M. A. Scopel[†], L. S. S. Soares[†], S. E. Michelin[†], A. S. Falck[†],
H. L. Oliveira[†], K. T. Mazon[†], M. M. Fujimoto^{*} and M.-T. Lee^{*}

[†] Departamento de Física, UFSC, 88040-900 Florianópolis, SC, Brazil

^{*} Departamento de Química, UFSCar, 13565-905, São Carlos, SP, Brazil

^{*} Departamento de Física, UFPR, 81531-990 Paraná, PR, Brazil

Abstract

In this work we present a theoretical study on elastic electron collisions with four isomers molecules (C_2N_2 , CNNC, CCNN and CNCN) in the low and intermediate energy range. More specifically, calculated elastic differential, integral and momentum transfer cross sections as well as grand total (elastic+inelastic) and absorption cross sections are reported in the 1-300eV energy range. A complex optical potential is used to represent the electron-molecule interaction dynamics whereas the Schwinger variational iterative method combined with the distorted-wave approximation is used to solve the scattering equations. Comparison of the present calculated results with the available theoretical data for electron- C_2N_2 collisions has shown remarkable similarity for incident energies higher than 20 eV, In addition, probably due to importance of the interaction between the scattering electron and the target valence-orbital electrons in this range