

Electron scattering from methyl formate (HCOOCH₃): a joint theoretical and experimental study.

Natalia Tańska¹, Edvaldo Bandeira^{2*}, Alessandra Souza Barbosa²,
Kuba Wójcik¹, Sylwia Dylńska¹, Elżbieta Ptasińska-Denga¹, Czesław
Szmytkowski¹, Márcio HF Bettega², Paweł Możejko¹.

¹*Institute of Physics and Applied Computer Science, Faculty of Applied Physics and Mathematics, Gdańsk University of Technology, ul. Gabriela Narutowicza 11/12, 80-233 Gdańsk, Poland*

²*Departamento de Física, Universidade Federal do Paraná, Caixa Postal 19044, 81531-980 Curitiba, Paraná, Brazil*

*email: bandeira@fisica.ufpr.br

In this joint theoretical and experimental study, we obtained cross sections for electron collisions with gaseous HCOOCH₃. Using the Schwinger multichannel and R-matrix methods, we calculated elastic cross sections in both static-exchange and static-exchange plus polarization approximations up to 15 eV. Absolute total cross sections were measured for energies ranging from 0.2 to 300 eV revealing a n* resonance around 2 eV and assigned to the A'' symmetry of the C_s group. These findings are compared with previous studies, and comparisons with formic acid (HCOOH) shed light on the impact of methylation on methyl formate's cross sections. This work has been accepted for publication in the Journal of Physical Chemistry A [1].

References

1. N. Tańska, E. Bandeira *et al*, accepted for publication in *J Phys Chem A*.