Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Low energy elastic electron scattering from furan[1] MURTADHA A. KHAKOO, JOHN MUSE, KEVIN RALPHS, California State University Fullerton, ROMARLY F. DA COSTA, Centro de Ciências Naturais e Humanas, Universidade Federal do ABC, São Paulo, Brazil, MARCIO H.F. BETTEGA, Departamento de Fisica, Universidade Federal do Paraná, Curitiba, Brazil, MARCO A.P. LIMA, Instituto de Fisica "Gleb Wataghin," Universidade Estadual de Campinas, São Paulo, Brazil — We report normalized-experimental and theoretical differential cross-sections for elastic electron scattering by C_4H_4O (furan) molecules. The experimental data were taken at incident electron energies of 1eV, 1.5eV, 1.73eV, 2eV, 2.7eV, 3eV, 5eV, 7eV, 10eV, 20eV, 30eV and 50eV and covered the angular range between 10 to 130 degrees. The calculations employed the Schwinger multichannel method with pseudopotentials and were performed in the static-exchange and in the static-exchange plus polarization approximations. The calculated integral and momentum transfer cross sections clearly revealed the presence of two shape resonances ascribed to the B_1 and A_2 symmetries of the C_{2v} point group, in very good agreement with the experimental findings. Overall agreement between theory and experiment is very good, especially for energies below 10eV.

[1]Supported by a US National Science Foundation PHY 0653452 grant and CNPq, Brazil under project number 490415/2007-5.

Murtadha A. Khakoo
California State University Fullerton

Date submitted: 20 May 2010 Electronic form version 1.4