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Electron Scattering from Fluorocarbons and Their Radicals¹

TODD MADDERN, Flinders University

In spite of their importance to industry, experimental studies of electron interactions with highly-reactive CF_x radicals are seldom reported in the literature. A crossed electron-molecular beam experiment, featuring a skimmed nozzle beam with pyrolytic radical production, has been used to measure absolute cross sections for electron scattering from the CF_2 molecule. A new technique for placing measured cross sections on an absolute scale is applied for molecular beams formed as skimmed supersonic jets. Absolute differential cross sections for CF_2 are reported for incident electron energies of 3-50 eV and over an angular range of 15-135 degrees. Integral cross sections are subsequently derived from those data. The present data are compared to theoretical predictions for the differential and integral scattering cross sections.

¹In conjunction with L. R. Hargreaves, J. Francis-Staite, M. J. Brunger, ARC Centre of Excellence, School of Chemistry, Physics and Earth Sciences, Flinders University, and S. J. Buckman, ARC Centre of Excellence, Australian National University, Australia.