Experimental and Theoretical Treatment of Electron Impact in Molecular Gases

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Single impact ionization functions for SF_6, CH_4, CO_2, and CO have been determined in the energy range $1eV \leq E_{el} \leq 200$ eV. The produced ions of atoms, molecules and/or fragments are identified in a mass spectrometer. From these data corresponding ionization energies and energy dependent cross sections have been calculated for singly ionized particles. Taking into account the effect of an increasing number of successive impacts by a mathematical model the ionization efficiency can be calculated from these data.

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