

ELECTRON IMPACT EXCITATION
AND IONIZATION OF SULFUR, SELENIUM,
AND TELLURIUM VAPORS

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S u m m a r y

Excitation and ionization processes of sulfur, selenium, and tellurium vapors by a low-energy (1–50 eV) electron impact have been investigated. The emission spectra are studied in the wavelength range 200–590 nm. The optical excitation functions for the most intense atomic and ionic spectral lines, as well as for molecular bands and emissions, are measured. The energy dependences of the total cross sections for the formation of positive and negative sulfur and selenium ions by the electron impact are also measured. The ionization energies of sulfur and selenium are determined, and the origin of the features observed in the measured curves is identified. It is found that, in the interval of temperatures, at which the experiments were carried out, the vapors of the researched objects, besides polyatomic molecules, also contain diatomic molecules of the studied elements at high concentrations. It is demonstrated that the atoms in excited states are mainly produced due to the dissociation of diatomic molecules.