Transport Coefficients and Cross Section Set for Electron Scattering in Mixtures CF_4 **and** CF_2 ZELJKA NIKITOVIC, VLADIMIR STOJANOVIC, ZORAN PETROVIC, Institute of Physics — We present transport coefficients for electrons in mixtures of CF_4 with CF_2 for conditions such as those found in plasma assisted technologies for semiconductor production. We used a two term numerical solution of the Boltzmann equation and we tested the accuracy of the results by using a Monte Carlo simulation. Mixtures of radicals with CF_4 were constructed by using the cross sections of Tennyson and coworkers [1]. We selected a wide range of abundances of radicals from 0.01% to 10% in the mixture. For low E/N large deviations from values for total electron attachment for pure CF_4 are obtained for mixtures of CF_4 and its radicals if abundances are sufficiently high. The effect of radicals on electron kinetics is relatively small for abundances below 1%. For higher abundances all transport coefficients, mean energies and rate coefficients are affected to a degree which could affect the operating conditions in plasmas.

[1] I. Rozum, P. Limao-Vieira, S. Eden, and J. Tennyson, N.J. Mason, J. Phys. Chem. Ref. Data, Vol. 35, No. 1, (2006) 267.

Zeljka Nikitovic
Institute of Physics

Date submitted: 14 Jun 2007

Electronic form version 1.4