Electron swarm parameters for Alcohols plasma by using electron collision cross – sections

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In the present work, are presented the transport coefficients of alcohols (methanol, ethanol, propanol, and butanol) widely used in areas like automotive, medicine, ecology and industry. The coefficients are calculated numerically using the two-term expansion of electron Boltzmann equation Bolsig+ and Monte Carlo collision code METHES, based on cross section sets obtained experimentally covering the interval of electron impact energy from 1 eV to 500 eV . The data obtained are compared with experimental values extracted from previous studies, such as effective ionisation coefficients and drift velocity. Results for the electron energy distribution function (EEDF), mean energy, reduced mobility and diffusion coefficient are also presented. For the purpose of calculations are used as parameters the temperature 300K and reduced fields E/N between $1 - 10^4$ Td (1Td = $10^{-21} V m^2$) and Plasma density $10^{19}(1/m^3)$. We seek to bring results that are meaningful in swarm physics and can be used in plasma models.