Kinetics of Electrons in Ar/BF_3 Mixtures[1] ZELJKA NIKITOVIC, VLADIMIR STOJANOVIC, Institute of Physics, Belgrade, Serbia, SVETLANA RADOVANOV, Varian Semiconductor/SSG/Applied Materials, 35 Dory Road, GL-17, Gloucester, MA01930 USA, ZORAN LJ. PETROVIC, Institute of Physics, Belgrade, Serbia —

In this work we present electron transport coefficients in Ar/BF_3 mixtures for the conditions used in plasma assisted technologies for semiconductor production. Transport coefficients are used as the basis for a global model in Ar/BF_3 mixtures. We have used a two term numerical solution of the Boltzmann equation and also performed exact calculations using a Monte Carlo simulation. We have calculated electron transport coefficients for a binary mixture of 90% Ar with 10% of BF_3. Similar mixtures are often used in plasma assited ion implantation applications. In order to determine the role of radicals on kinetics, we have added 1% of radical species F and F_2. 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.

Zeljka Nikitovic
Institute of Physics, Belgrade, Serbia

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