Abstract Submitted
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Numerical investigation on fundamental properties in capacitively-coupled methane plasmas for deposition of diamond-like carbon films[1] AKINORI ODA, Department of Electric, Electronics and Information Engineering, Chiba Institute of Technology, HIROYUKI KOUSAKA, Graduate School of Engineering, Nagoya University — Capacitively-coupled methane (CH_4) plasmas for deposition of diamond-like carbon films have been simulated using a self-consistent one-dimensional fluid model, incorporating the mass balance equations for electrons, ions, radicals and non-radicals, the electron energy balance equation, coupled with the Poisson equation. Despite of low-pressure CH_4 gas condition, many positive-ion species, such as $C_2H_4^+$, CH_4^+, $C_2H_2^+$, CH_5^+ etc., have been found in the plasmas. The non-radical neutrals, such as C_2H_4, C_3H_8, C_2H_2 and C_2H_6, have also found with higher densities comparable to the source gas density. This result indicates that this complexity of background gas in CH_4 plasmas is strongly affected to the electron energy distribution function, which is important for the determination of plasmas properties.

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