

Abstract Submitted
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Atmospheric-pressure microgap plasma produced by 10-GHz microwave excitation A. KONO, M. KOBAYASHI, M. ARAMAKI, Nagoya University — Atmospheric pressure high-density glow discharge can be sustained continuously in the microgap (100- μm wide) between two knife-edge electrodes by microwave excitation. Detailed characterizations of a microgap plasma produced by 2.45-GHz microwave excitation were reported previously, including electron density and temperature measurements using laser Thomson scattering, gas temperature measurements under the influence of gas flow, etc. In the present study, we investigate the effect of microwave frequency on the electron density, in view of the analogy with the fact of increasing electron heating efficiency with increasing driving frequency in usual rf low-pressure capacitively coupled discharge. Preliminary studies on three different electrode configurations and microwave driving schemes indicate that the electron density do not reach that in the case of 2.45-GHz excitation, suggesting a large radiation loss of the microwave power in 10-GHz excitation. A discharge structure to reduce the radiation loss is being pursued. (Work supported by Grant-in-aid 15075205 from MEXT Japan.)

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