

Abstract Submitted
for the GEC18 Meeting of
The American Physical Society

Observation of cross sectional plasma structure in a gap of an atmospheric pressure microwave discharge¹ HIROTAKA TOYODA, YOSHIKI BABA, HARUKA SUZUKI, Nagoya University — Microwave discharge plasma using slot is attractive due to its ability of high-density and stable plasma production, and we have developed a long-scale AP microwave plasma (AP microwave line plasma: AP-MLP) source up to 1 m in length using loop-structured waveguide and travelling wave. So far, we have measured plasma structure from the outside of the waveguide, but cross-sectional observation of the plasma inside the gap has not been observed yet. In this work, we have developed an atmospheric pressure pulsed-microwave plasma source where outer conductor of a coaxial waveguide is cut into two and plasma is produced in the gap. Cross sectional structure of the plasma is observed using a microscope and an ICCD camera. Emission from the plasma showed that the most intense region is in the vicinity of the gap electrode and that the emission intensity decays with the distance from the inner side of the waveguide to the outer side. With increasing the gas flow speed, shift of the emission region from the inside to the outside is clearly observed, indicating the importance of the gas flow on the plasma structure. Time-resolved measurement of the emission shows development of the plasma after turning on the microwave power.

¹Supported by MEXT 16H03893

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Date submitted: 15 Jun 2018

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