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AC Driven Micro-hollow Discharges Triggered by Self-generated Dielectric Barrier Discharges JUN WATANABE, AKIHISA OGINO, MASAAKI NAGATSU, Shizuoka University — Atmospheric-pressure discharges have been widely investigated to develop low temperature materials processing techniques for a variety of industrial applications. Up to now, several methods have been developed to generate atmospheric pressure plasmas, such as dielectric barrier discharge (DBD), micro-hollow discharge (MHD), and plasma jet. In our previous research, we studied the discharge characteristics of MHDs with a multi-hole structured DBD as pre-ionization source. We confirmed that MHDs were generated at a voltage about 500 V lower than that in the case of without DBD. From the numerical analysis, we showed that electrons generated by DBD were accelerated inside the hole by electric field applied during the negative polarity of DBD driving voltages. In this study, we focused on the MHD triggered by the self-generating DBD. To confirm that MHDs will be pre-triggered by DBDs driven by AC high voltages, we have carried out the measurements of discharge characteristics by using time-truncated sinusoidal wave signals with two periods and single hole MHD electrode. From the experiments, we confirmed that MHD was triggered at the timing of self generating DBDs.

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