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Dependence of streamer density on electric field strength on positive electrode NAKAMURA KOKI, OKUYAMA TAKAHUMI, DOUYAN WANG, N. TAKAO, AKIYAMA HIDENORI, Kumamoto University, KUMAMOTO UNIVERSITY COLLABORATION — Pulsed streamer discharge plasma, a type of non-thermal plasma, is known as generation method of reactive radicals and ozone and treatment of exhausted gas. From our previous research, the distance between electrodes has been considered a very important parameter for applications using pulsed streamer discharge. However, how the distance between electrodes affects the pulsed discharge hasn't been clarified. In this research, the propagation process of pulsed streamer discharge in a wire-plate electrode was observed using an ICCD camera for 4 electrodes having different distance between electrodes. The distance between electrodes was changeable at 45 mm, 40 mm, 35 mm, and 30 mm. The results show that, when the distance between electrodes was shortened, applied voltage with a pulse duration of 100 ns decreased from 80 to 60.3 kV. Conversely, discharge current increased from 149 to 190 A. Streamer head velocity became faster. On the other hand, Streamer head density at onset time of streamer head propagation didn't change. This is considered due to the electric field strength of streamer head at that time, in result, it was about 14 kV/mm under each distance between electrodes.

Nakamura Koki
Kumamoto University

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