Abstract Submitted
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Generation of self-organized micro-gap discharge using sapphire dielectrics[1] MD. ANWARUL ISLAM, SHIZUKA TADA, KOSUKE JUMONJI, SEIJI MUKAIGAWA, KOICHI TAKAKI, Department of Electrical Engineering and Computer Science, Iwate University — Micro-plasma generated dielectric barrier discharge with independently self-organized structure under certain conditions and plasma photonic crystals (PPC) have been obtained by the self-organization of filaments in an atmospheric dielectric barrier discharge, which has attracted significant attention. In the present study, atmospheric pressure micro-gap discharge was generated by using sapphire and glass dielectric. Since the charge accumulated in the dielectric is estimated to an important factor that affects the state of DBD, and also affects the self-organized structure. Discharge duration has an impact on self-organized mode and glow mode discharge, has carefully compared here with analysis. Here we have compared the discharge current and breakdown voltage phenomena between sapphire and glass dielectric. Moreover, electron density and current density for different dielectric materials has compared as it is principal parameters to show plasma density. On the other hand, filament structures got from ICCD camera were also observed and examined to get proper hexagonal structure which can effect self-organization of filaments as well.

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