

Abstract Submitted
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Secondary Ionization Coefficient of MgO and Accumulated Charge TAKASHI SEKIZAWA, SUSUMU SUZUKI, Chiba Institute of Technology, YASUHIDE KASHIWAGI, Kisarazu National College of Technology, HARUO ITOH, Chiba Institute of Technology — An investigation of Townsend's secondary ionization coefficient γ of MgO is carried out experimentally [1-3] using the breakdown voltages and Townsend's criterion. An investigation by the V-Q Lissajous figure method [4] is also carried out to determine the breakdown voltage V_s of a MgO film electrode at frequencies up to 2 kHz, considering the effect of the accumulated charge on the MgO film electrode. From the results, γ that considers the effect of the accumulated charge is larger than γ in which the effect of the accumulated charge is not considered. Furthermore, we found that the γ of MgO is larger than the γ values of metallic electrodes. On the other hand, it is evident that no accumulated charge effect appeared at frequencies lower than 50 Hz of the applied sinusoidal voltage, because the decay of the accumulated charge on the MgO film electrode vanished with a time constant of about 40 ms in this case. More detailed studies including the other dielectric electrode are being carried out. [1] S.Suzuki and H.Itoh, 2004 *Jpn.J.Appl.Phys.*, **43**, 10, 7234-7239. [2] S.Suzuki and H.Itoh, 2007 *Jpn.J.Appl.Phys.*, **46**, 1129-1136. [3] S.Suzuki and H.Itoh, 2009 *IEEJ Trans. FM*, **129**, 909-914 [in Japanese]. [4] K.Teranishi, N.Shimomura, S.Suzuki and H.Itoh, 2009 *Plasma Sources Sci. Technol.*, **18**, 045011.

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