

Abstract Submitted
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Optical measurements of dielectric barrier discharges of twisted magnet wires in atmospheric humid air T. MURATA, Y. KIKUCHI, N. FUKUMOTO, M. NAGATA, University of Hyogo — Dielectric barrier discharges (DBDs) can be generated by a simple electrode configuration in atmospheric pressure, so that it can be used to various applications such as plasma sterilization [1]. We have investigated effects of environmental conditions on DBD in twisted enameled magnet wires. The DBD was generated by an ac sinusoidal voltage application to the twisted pair in a humidity and temperature chamber. Measurements of the DBD were performed by a current sensor and a photomultiplier tube (PMT) in this study. As the result, the discharge inception voltage (DIV) was decreased by increasing the relative humidity. Especially, the DIV was significantly dropped at 95 %RH. The measured DIV could be explained by moisture absorption into the dielectric layer and surface wettability. In addition, the amount of the DBD was also decreased in humid air. Optical measurements of the DBD by a spectrometer are being prepared to know the dominant reaction in the DBD in humid air. [1] M.K. Boudam, et al., J. Phys. D:Appl. Phys. **39**, 3494 (2006).

Yusuke Kikuchi
University of Hyogo

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