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Characteristics of Discharge Plasma in Liquid using less than 3 kV

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Discharge plasma in liquid is generated by high voltage such as 15 kV. Our previous experiments succeed with around 3 kV in under water discharges. Our work aim to generate the discharge plasma in liquid less than 3 kV using capacitor discharges. Electrical capacitance is as follows for discharge: 0.5 μF, 1.0 μF of film capacitor and 4 nF of ceramic capacitor. A charger is used DC power supply (HAR-5P6), and A size of reactor is 10x10x10 cm. We compared capacitors liquid conductivity and plasma size. As a result, the discharge plasma in liquid was generated between 0.5 μF, 1.0 μF and 4 nF. Ratio of generation was not changed between 0.5μF and 1.0 μF. Scale of discharge plasma in liquid changed, the capacitor of 1.0 μF is biggest among three capacitor, and 0.5 μF is bigger than 4 nF. Small capacitance with low voltage and current is important to electrical circuit. In higher conductivity, plasma generation in liquid was observed lower voltage.

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