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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 0.5 μF 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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