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## Effects of Hydrophilic Surface Treatment on SUS Substrates by Using Dielectric Barrier Discharge

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Fuel Cell is used stacking metal or polymer substrate. This hydro property of substrate surface is very important. Usually, surface property is hydrophilic. The surface oxidation of SUS is investigated through plasma treatments with an atmospheric-pressure dielectric barrier discharge (DBD) for increasing hydrophilic property. The plasma process makes an experiment under various operating conditions of the DBD, which operating conditions are treatment time, plasma gas mixture ratio, the plasma source supply frequency. Two kinds of SUS substrate, SUS-304 and SUS 316L, were used. Discharge frequency has a crucial impact on equipment performance and gas treatment. After the plasma treatment of a SUS plate, highly improved wettability was noted. But, when high oxygen supply, the substrate damaged seriously.

**Keywords:** Dielectric barrier discharge, Hydrophilic surface, Oxidation, Fuel cell