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## EFFECT OF SUBSTRATES ON A NANOSECOND HELIUM PLASMA JET IMPINGING ON WATER, SALINE OR PIG SKIN

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Atmospheric pressure plasma jets have been widely used for biomedical applications. However, characteristics of discharge could vary dramatically depending on the biological substrates which further affects the treatment results. In this study, effects of three substrates (i.e. water, saline and pig skin) on electrical and optical properties of a pulsed helium plasma jet powered by 200 ns, 7 kV pulses at 1 kHz and with a He flow rate of 70 sccm are evaluated via electrical measurements and optical emission spectroscopy. Energy per pulse for both saline and pig skin are comparable at about 39  $\mu$ J, which is 1.2 times higher than that with water. Spatially-resolved optical emission spectroscopy reveals that most of the excited species (i.e. OH, *N2*+, He*and O*) are localized within 2 mm from jet nozzle except for N2 which extends up to 6 mm away from the nozzle when saline or pig skin are used as the substrate. Stronger emissions from excited OH, *He* and O*are obtained using pig skin as the substrate while higher emissions from N2* and N2+\* are from the plasma with saline as the substrate. Gas temperature and the ground state OH radicals near the surfaces of substrates are also discussed.

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