Abstract Submitted
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Micro-Plasma Generation in Salt Containing Liquids[1] LUCAS SCHAPER, WILLIAM G. GRAHAM, Queen's University Belfast — Here studies on the formation of a micro-plasma in a salt solution are presented. Single voltage pulses of negative polarity and amplitudes of up to 350V are applied to a coaxial electrode setup with a cylindrical centre electrode. Ohmic heating around the centre electrode leads to a phase transition of the liquid and forms a vapour layer, succeeded by plasma formation within the layer. Analysis is performed by using current-voltage waveforms and time dependant emission measurements. Shadowgraphy, in combination with ultra fast ICCD cameras, allows for exploration of vapour and plasma behaviour. Depending on the voltage amplitude single nanosecond discharges or continuous microsecond discharges are ignited. In both cases the emission spectra are very similar and dominated by sodium D-lines while no chlorine emission is observed. Recent experiments suggest that under discharge conditions the vapour liquid boundary as well as the electrode surface could be sources of sodium atoms. Space resolved spectroscopy reveals that discharges originate close to the electrode and, in the continuous case, propagate into the vapour volume in time. Results of our studies on the effect of plasma produced species on cells will also be presented.

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