Abstract Submitted
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**Imaging diagnostics of pulsed plasma discharges in saline generated with various sharp pin powered electrodes** L. ASIMAKOULAS, M. L. KARIM, Centre for Plasma Physics, Queen's University Belfast, L. DOSTAL, F. KRCMA, Brno University of Technology, W. G. GRAHAM, T. A. FIELD, Centre for Plasma Physics, Queen's University Belfast — Plasmas formed by 1 ms pulses of between 180 and 300 V applied to sharp pin-like electrodes immersed in saline solution have been imaged with a Photron SA-X2 fast framing camera and an Andor iStar 510 ICCD camera. Stainless steel, Tungsten and Gold electrodes were investigated with tip diameters of 30 $\mu$m, 1 $\mu$m and $< 1\mu$m respectively. As previously observed, a vapour layer forms around the electrode prior to plasma ignition [1]. For gold and stainless steel lower voltages were required to minimize electrode damage. Preliminary anlaysis indicates at lower voltages for all tips the fast framing results show that light emission is normally centred on a single small volume, which appears to move about, but remains close to the tip. In the case of Tungsten with higher voltages or longer pulses the tip of the needle can heat up to incandescent temperatures. At higher voltages shock wave fronts appear to be observed as the vapour layer collapses at the end of the voltage pulse. Backlighting and no lighting to observe bubble/vapour layer formation and emission due to plasma formation were employed. Sometimes at higher voltages a thicker vapour layer engulfs the tip and no plasma emission/current is observed. 1. Schaper, L. et al. Plasma Sources Sci. Tech., 20 (2011) 034003

Leonidas Asimakoulas
Centre for Plasma Physics, Queen's University Belfast

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