

Abstract Submitted  
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**The rf Micro-Hollow Device** P.D. MAGUIRE, C.M.O. MAHONY, J. GREENAN, NIBEC University of Ulster, T. GANS, D. O'CONNELL, W.G. GRAHAM, CPP Queens University Belfast — The rf Micro-Hollow Device (rfMHD) is a new micro-plasma source with which we aim to provide sub 10 micron plasmas and densities  $>10^{22}\text{m}^{-3}$ . Applications include targeted processing for electronic & bio-materials, gas sensors and light sources. The micron-scale dimensions and near atmospheric pressure operation give new physics at turn on and during steady state operation. RfMHDs of 25 microns diameter have been demonstrated[1]; they ignite readily and operate stably at powers less than 10W. The rfMHD device will be introduced and its operation described. Results from electrical and optical measurements & their analysis will be presented. Potential processes contributing to ignition & sustainment will be discussed. The prospects of operating with smaller source diameters & the science required to describe operation at these reduced scales will be addressed. The rfMHD will be presented in the context of biomedical applications currently of interest to this centre.

[1] Mahony, Gans, Graham, Maguire & Petrovic, 2008 *Appl Phys Lett* **93** 011501

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