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RF Micro-Hollow Device Sustainment, Ignition and Mode Transitions C.M.O. MAHONY, J. GREENAN, P. MAGUIRE, NIBEC, University of Ulster — Rf Micro-Hollow Devices (rfMHD) are new micro-plasma sources which provide plasmas from the millimetre scale to below 10 microns. These sources ignite readily and operate stably at powers less than 10W at near atmospheric pressure. Several discharge modes are evident, providing novel ignition and steady state physics. The devices are aimed at applications such as targeted processing of human cells and other bio-materials, processing of inorganics, sensors and light sources. The electrical and optical characterisation of a number of discharge configurations over a range of control parameter values will be presented. Effective electron temperature is derived from OES via a collisional radiative model, VI characteristics in various discharge modes are used to examine sustainment processes and mode transition/ignition. The results of scaling studies will be used to investigate the limits of RfMHD operation and provide comparison with standard dc operated sources.

C.M.O. Mahony
NIBEC, University of Ulster

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