

Abstract Submitted
for the GEC16 Meeting of
The American Physical Society

Impact of electric field from a plasma jet on biological targets

CLAIRE DOUAT, THIBAUT DARNY, SYLVAIN ISENI, XAVIER DAMANY, SEBASTIEN DOZIAS, JEAN-MICHEL POUVESLE, ERIC ROBERT, GREMI UMR7344CNRS University of Orleans, France, VINODINI VIJAYARANGAN, ANTHONY DELALANDE, CHANTAL PICHON, CBM, UPR 4301 CNRS Orleans, France — Atmospheric pressure plasma jets have demonstrated their ability in biomedical applications thanks to their low gas temperature and their capacity to produce radicals, ions, electrons, UV radiation and electric fields. However the understanding of the interactions between the plasma and living cells and tissues is still far from being completely understood. Recently, Robert *et al* characterized two components of the electric field from a plasma jet and showed that the latter can propagate deeply in tissues on several mm [1]. In this work, we focus on the study of the electric field induced by the plasma and its influence on the cell membrane. Propidium iodide, dextran sulfate and plasmid DNA are used to measure the permeability of the membrane, while an electro-optic probe is used to measure the longitudinal and the radial components of the electric field. The two components are both spatially and temporally resolved. To investigate the contribution of the electric field on the cell membrane, a dielectric barrier is used between the plasma and the biological target. A comparison with and without the barrier will be presented for both biological and agriculture applications. [1] E. Robert *et al*, 2015, Phys. Plasmas 22 122007

Claire Douat
GREMI UMR7344CNRS University of Orleans, France

Date submitted: 06 Jun 2016

Electronic form version 1.4