



Contribution ID: 170

Type: **Poster**

RONs detection in plasma activated water

Monday 19 June 2017 13:30 (1h 30m)

Activation of water using pulsed electric discharges serves several important agricultural and biomedical applications. Plasma activated water (PAW) contains reactive oxygen and nitrogen molecular species (RONS) like hydrogen peroxide H_2O_2 , nitric acid HNO_3 , nitrous acid HNO_2 and peroxynitrite $ONOO^-$, exhibiting strong antiseptic power. TU/e spin-off company VitalFluid develops generators for production of PAW, successfully applied for plant growth enhancement via combined plant disease control and nutrition; in the biomedical field, promising results have been obtained with skin disinfection.

Both in PAW synthesis optimization and PAW quality control, knowledge on the actual RONS composition is crucial. Due to its high degree of reactivity, peroxynitrite is regarded as primary marker for PAW activity. However, direct measurement of peroxynitrite is not possible. Based on a theoretical model from literature, accepting hydrogen peroxide, nitrite and acidity data, peroxynitrite levels can be determined. This enables an investigation of the influence of synthesis process parameters on PAW activity. An overview will be presented.

Authors: Dr BECKERS, F.J.C.M. (Eindhoven University of Technology, department of Electrical Engineering, Electrical Energy Systems group); HOEBEN, W.F.L.M. (Eindhoven University of Technology); Dr HUISKAMP, T. (Eindhoven University of Technology, department of Electrical Engineering, Electrical Energy Systems group); Mr LEENDERS, P.H.M. (VitalFluid); Prof. PEMEN, A.J.M. (Eindhoven University of Technology, department of Electrical Engineering, Electrical Energy Systems group); Dr VAN HEESCH, E.J.M. (Eindhoven University of Technology, department of Electrical Engineering, Electrical Energy Systems group); Mr VAN OOIJ, P.P. (VitalFluid)

Presenter: HOEBEN, W.F.L.M. (Eindhoven University of Technology)

Session Classification: Poster session I - Pulsed Power Industrial and Bio-Medical Applications

Track Classification: Pulsed Power Industrial and Bio-Medical Applications