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BOOK OF ABSTRACTS

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Raman light sheet microspectroscopy diagnostic of water electrospray

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Abstract:

Cold atmospheric plasmas generated in aerosols using an electrospray process presents enormous potential for innovations in agriculture, environmental science, and medicine. However, further research is needed to address the challenges of *in-situ* diagnostics of electrospray aerosol particles exposed to plasma [1]. Here we present study of electrospray by in-situ Raman light sheet microspectroscopy [2], with a focus on the detection of NO_3^-.

We have shown that this technique is suitable for *in-situ* monitoring of the Taylor cone, water filament and microdroplet regions of the electrospray, with quantitative detection of NO_3^-. The detection limit is about 1 mM when probing the Taylor cone or water filament, and about 5 mM in the microdroplets. However, the detection limit needs to be improved to reach much lower valuesbefore this technique can be used for probing the gradual increase of the NO_3^- in the microdroplets exposed to the plasma. This could be probably achieved by using the coherent anti-Stokes Raman scattering technique.

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