PLASMA-INDUCED INACTIVATION OF A REFERENCE MICRO-ORGANISM

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Research related to non-thermal atmospheric pressure plasma sources and technologies is currently focused on emerging applications in medicine and biology. As in any other plasma application, the efficacy of the plasma treatment depends on various discharge operating conditions such as discharge geometry, dissipated power and feed gas composition, all of which influence chemical and physical processes in the discharge. In addition, attention needs to be paid to the various methods in which biological 'targets' are prepared and presented to the plasma as these can have a profound influence on the treatment efficacy. Currently, different laboratories around the world use a wide variety of plasma devices and microbiological techniques, making a direct and quantitative comparison of experimental results virtually impossible.

The work we present here is part of an ongoing European initiative (European COST Action MP 1101) that aims to create a reference plasma system and a biological reference protocol for the study and comparison of plasma treatments across labs. Endospores of *Bacillus subtilis ATCC 6633* are proposed as reference microorganism as they can be stored for long periods without loss of viability, serving as a common starting point for experiments performed in different locations and at different times. To avoid problems related to multi-layer formation, a monolayer of spores are deposited onto filter membranes using a vacuum filtration technique similar to that reported by Bayliss *et al (Plasma Process. Polym*, 9(6): 597, 2012) and these are then exposed to different continuous and pulsed plasma systems.

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