
From single plasma jets to large atmospheric plasma sources for biological applications

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With the nowadays-rapid development of atmospheric plasma applications in the fields of medicine, decontamination, cosmetic and agriculture, researchers are confronted with the development of new sources for treating large surfaces or volumes or great quantities of liquid or material. Single plasma jets have allowed significant advances and the results are particularly promising, but likely to be limited in the future. The treatment times are indeed rather long due to the very small treated surface area or liquid volume resulting from the produced plasma. Surface DBDs, which allow treatment of quite large areas, quickly find their limits when surfaces are more complex or have great 3D structures. There is a real challenge to develop sources that allow treatment over larger areas while remaining practical and at a reasonable cost. The scale factor then becomes very important and must be treated with the outmost attention.

In this context, after a rapid review of available systems, some new developments concerning single jets and plasma jets interactions with liquids, we will present results obtained on the development of the sources allowing to treat large surfaces or volumes realized from multijet systems emanating from a single discharge reactor. Examples of applications will be given in the field of medicine or liquid treatment.

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