

Modification of biologically-relevant targets by atmospheric pressure plasmas: in search of the active components

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The chemical and biological effects of atmospheric pressure plasma sources on a range of target systems have been extensively studied in the literature. However, the precise mechanisms behind these effects are still often poorly defined. This results largely from the highly complex chemical kinetics occurring in these systems, which means that isolation of the precise chemical pathways leading to the observed effects is highly challenging. In this work we focus on the effects of plasma treatment on biologically-relevant model systems in dry form, removing the associated complexity of the liquid chemistry. As a plasma source, a dielectric barrier discharge, operated in controlled atmospheres is used. To link plasma-produced reactive species to specific effects on model systems, species densities are characterised using a combination of experimental measurements and 0-D plasma chemical kinetics simulations.

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