

Abstract Submitted
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Examining the Effects of Changing Plasma Parameters on Peroxide Production in the Effluent and Liquid Phase Using a Cost Reference Jet BRAYDEN MYERS, KATHARINA STAPELMANN, North Carolina State University — Hydrogen peroxide has been shown to be one of the most important long lived species for biomedical applications of plasma [1-3]. Understanding the production mechanisms and origin of peroxide in atmospheric pressure plasmas is beneficial for both isolating the effects of short lived reactive species and investigating chemical pathways in plasma treated liquid. Additionally, this information can be helpful for regulating the amount of hydrogen peroxide delivered to a designated area or solution. To this end, hydrogen peroxide concentrations were measured colorimetrically after plasma treatment with the COST Reference Microplasma Jet [4] for a variety of different solutions, including organics, spin traps, cell medium, and buffer. Plasma parameters were varied to include applied voltage, gas admixture, and treatment distance. These measurements, in conjunction with EPR measurements using the spin trap DMPO, show that peroxide concentrations and the location of its production (gas/liquid phase) can be mediated by both plasma and solution properties.

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