

Abstract Submitted
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Investigation of Bacterial Biofilm Destruction Using Gas Discharge Plasma N. ABRAMZON, J. BRAY, J.C. JOAQUIN, G. BRELLES-MARIÑO, California State Polytechnic University, Pomona — Biofilms are bacterial communities embedded in an exopolysaccharidic matrix with a complex architectural structure. Bacteria in biofilms show different properties from those in free life thus, conventional methods of killing bacteria are often ineffective with biofilms. The use of plasmas potentially offers an effective alternative to conventional sterilization methods since plasmas contain a mixture of charged particles, chemically reactive species, and UV radiation. 4 and 7 day-old biofilms were produced using two bacterial species. Gas discharge plasma was produced by using an Atomflo™ reactor (Surfx Technologies) and bacterial biofilms were exposed to it for different periods of time and different plasma conditions. For each plasma condition, cell counts were plotted against the time of treatment, which allow us to calculate D-values and compare various plasma treatments quantitatively. Optical emission spectroscopy was used to study plasma composition and temperature which was then correlated with the effectiveness of killing.

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