

Abstract Submitted
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A new design of dielectric barrier discharge for self surface sterilization¹ YANGFANG LI, Max-Planck-Institute for Extraterrestrial Physics, TETSUJI SHIMIZU, JULIA ZIMMERMANN, GREGOR MORFILL, PLASMA MEDICINE PROJECT TEAM — We present a new design of the electrode for dielectric barrier discharge. In this new development, electrodes are encapsulated inside a dielectric surface so that no naked metal electrode is exposed to the air. The plasma is ignited on the surface of the device by applying low-frequency (~ 1 kHz) high voltage (~ 10 kV) signal between the electrodes and the surface can then be sterilized by the plasma. We tried the different encapsulating materials, for example, epoxy, optical glass, and glass ceramic. And also different arrangements of the electrodes were tested for the bactericidal effect and for the plasma ignition on the surface. The results show that the surface can be sterilized within 30 seconds for typical operating conditions. In the end, we will discuss the possible applications of this new device for a regular disinfection of the kitchen tables, laboratory benches, and so on.

¹Plasma medicine project, a collaboration initiated by Max-Planck-Institute for Extraterrestrial Physics

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