
Biological safety assessment of activated saline solution exposed to atmospheric flexible surface dielectric barrier discharges using sputtered-type flexible copper clad laminates

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As a key material of chip on film (COF) used in liquid crystal display panels, sputtered-type flexible copper clad laminate (FCCL) could be a basic material for thin film flexible surface dielectric barrier discharges (SDBD) with an advantage of low cost despite of disposability. For its applications such as sterilization of pathogenic, using in a treatment of wet dressing for burn wounds as an adjuvant, and promoting the growth of plants with characteristics of carbon dioxide (CO₂) generation, the biological safety assessment on chemicals released during etching polyimide in the SDBD should be investigated. This work presents that the biological safety assessment of activated saline solution exposed to atmospheric flexible SDBD using sputtered-type FCCL provided by Korea Copper Foils & FCCL Technologies (KCFT), co. Ltd.. Effects of sterilization of bacteria (*E. Coli*), cytotoxicity and mutagenicity on L929 mouse fibroblast cells cultured in activated saline solution exposed to the SDBD of which discharge power was 10 W had been analyzed along with the generation of intercellular reactive oxygen species (ROS). *E. Coli.* was successfully sterilized, while cytotoxic, mutagenic effects and ROS generation in the fibroblast were not observed, which suggests that the activated saline solution exposed to the SDBD using the FCCL is biologically safe to mammalian cells.

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