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**Sterilization and Mechanism of Microorganisms on A4 Paper by Dielectric Barrier Discharges Plasma at Atmospheric Pressure** JIA XI-ANGHONG, WAN JUN, YANG JINHUA, XU FENG, WANG SHOUGUO, INSTITUTE OF MICROELECTRONICS OF CHINESE ACADEMY OF SCIENCES TEAM, ASTRONAUT RESEARCH AND TRAINING CENTER OF CHINA TEAM — This study investigated the microorganisms' sterilization and mechanism by a DBD plasma device at atmospheric pressure. The device including a transfer system and two roller-electrodes is driven by sine-wave high voltages at frequencies of 15 kHz. Normal A4 papers were used to study the effects of the sterilization on their surfaces by analyzing the number of the living bacteria cells. The state of *Escherichia coli*'s DNA were also measured by agarose gel electrophoresis after sterilization to analyze the inactivation mechanisms. Experimental results indicated that microorganisms on the surface of A4 Papers almost were destroyed while the papers went through the device and there was no any damage of the paper during the process. The main reason engendered bacteria death was due to the double chains of the DNA broken by the plasma.

Jia Xianghong

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