

Design of plasma low temperature sterilization device with additional ultrasonic unit

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Plasma technologies for ozone generation based on dielectric barrier discharges (DBDs) under atmospheric pressure are constantly being developed for sterilization and disinfection in medicine [1, 2]. The prototype of plasma sterilizer for low-temperature sterilization of medical instruments and medical products in water with ozone and additional ultrasonic cavitation has been designed. Plasma sterilization is based on oxidative effect of ozone combined with ultrasonic water treatment, which ensures immediate biological and mechanical cleaning [3, 4]. Sterilization is carried out with ozone produced from oxygen by a built-in ozone generator based on a dielectric barrier discharge with a power supply of up to 300 W. The volume of sterilization bath comprised 2.5 l. A high concentration of ozone in water (up to 8 mg/L) is achieved for effective and complete sterilization of medical tools at low temperature. Several microbiological tests on elimination of various bacteria strains have been carried out.

References

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