



**TÜRK
[PATENT]**
TÜRK PATENT VE MARKA KURUMU

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Title of the Invention

**A LOW-TEMPERATURE H₂O₂ AND OZONE-BASED HEAVY MOLECULE
HYDRONIUM GAS PLASMA STERILIZATION METHOD**

Patent Owner

HASAN TAHSİN ÖZBEK

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Prof. Dr. M. Zeki DURAK
President

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(74) Representative

OSMAN FATİH HAŞİMOĞLU

(71) Patent Owner

HASAN TAHSİN ÖZBEK

(72) Inventor

HASAN TAHSİN ÖZBEK

(54) Title of the Invention

A Low-Temperature H₂O₂ and Ozone-Based Heavy Molecule Hydronium Gas Plasma Sterilization Method

(57) Abstract

This invention relates to a low-temperature H₂O₂ and ozone-based heavy molecule hydronium gas plasma sterilization method that ensures sterilization safety at full capacity and under full-load conditions for the sterilization and use of surgical and medical materials used in hospitals and similar environments, during surgery, after surgery, and on patients. These materials include all kinds of heat- and moisture-sensitive medical instruments, plastics, lumened materials, long-lumened materials, electromechanical instruments and surgical equipment, implants, complex and long materials such as single- and multi-channel flexible endoscopes, imaging devices/scopes, accessories, and similar surgical and medical materials.

The method enables the sterilization of medical lumen materials intended to be sterilized without classification, separation by type, or consideration of length, inner diameter, load, or quantity.

Through the hydronium and heavy molecule formation step, which is one of the steps of the new sterilization method, hydronium and heavy molecules are formed inside the sterilization chamber. As a result of adsorption — molecular gas coating — on all kinds of microorganisms and organic materials, sterilization can be achieved by means of the new sterilization method. When the sterilization chamber is fully loaded with the materials to be sterilized, all materials, including very long lumens, can be safely sterilized under full-load conditions regardless of length and inner diameter.

In the sterilization system in which the new sterilization technique and method are used, safe sterilization is achieved through the combined use of hydrogen peroxide (H₂O₂) and ozone (O₃), together with the effective sterilization action of hydronium (H₃O⁺), heavy molecules such as H₄O, H₂O₃, H₂O₄, H₃O, OOH, HO₃, etc., radicals, hydroxyls, plasma, and ions.