

Abstract Submitted  
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**Material Compatibility of Medical Sterilizer Using Oxygen Plasma** HIROSHI TANAKA, REOTO ONO, NOBUYA HAYASHI, Kyushu University, YASUSHI HANADA, Elquest Co. Ltd., MINORU NODA, MASA AKI GOTO, Saga University — Material compatibility of oxygen plasma sterilizer is investigated comparing with hydrogen peroxide ( $\text{H}_2\text{O}_2$ ) sterilizers and a gaseous  $\text{H}_2\text{O}_2$  sterilizer. Organic materials such as ABS, PE, PP, and PET are used as sample materials, and are irradiated by active oxygen species produced in oxygen plasma. After plasma irradiation, surface of the sample materials is observed using a scanning electron microscope and FTIR spectroscopy. Strengths of the organic materials are evaluated by the tension test. Also,  $\text{H}_2\text{O}_2$  plasma sterilizer and a gaseous  $\text{H}_2\text{O}_2$  sterilizer those are commercially available are utilized to compare the material compatibility, especially organic compounds. The ABS resin becomes slightly soft after irradiation by both plasmas and gaseous  $\text{H}_2\text{O}_2$ . Also, PET material becomes soften by each sterilization treatment. Decrease of peak heights of CH around 1200 and 1730  $\text{cm}^{-1}$  and increase of that of OH at 3300  $\text{cm}^{-1}$  in FTIR spectra indicates the oxidation of ABS resin by both plasma and gaseous  $\text{H}_2\text{O}_2$ . In the case of PET material, treatment by the plasma has not modified chemical composition but changed the crystal structure. The gaseous  $\text{H}_2\text{O}_2$  is completely friendly for the PET material.

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