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[\[PDF \(1740K\)\]](#) [\[References\]](#)**Plasma-based Fluorine Ion Implantation into Dental Materials for Inhibition of Bacterial Adhesion**[NURHAERANI^{1\)}](#), [Kenji ARITA^{1\)}](#), [Yukari SHINONAGA^{1\)}](#) and [Mizuho NISHINO^{1\)}](#)

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Abstract:

The aims of this study were to evaluate the fluorine depth profiles of pure titanium (Ti), stainless steel (SUS), and polymethyl methacrylate (PMMA) modified by plasma-based fluorine ion implantation and the effects of fluorine ion implantation on contact angle, fluoride ion release, and *S.mutans* adhesion. Fluorine-based gases used were Ar+F₂ and CF₄. By means of SIMS, it was found that the peak count of PMMA was the lowest while that of Ti was the highest. Then, up to one minute after Ar sputtering, the presence of fluorine and chromic fluoride could be detected by XPS in the surface and subsurface layer. As for the effects of using CF₄ gas for fluorine ion implantation into SUS substrate, the results were: contact angle was significantly increased; no fluoride ion release was detected; antibacterial activity was significantly increased while initial adhesion was decreased. These findings thus indicated that plasma-based fluorine ion implantation into SUS with CF₄ gas provided surface antibacterial activity which was useful in inhibiting bacterial adhesion.

Key words:[Ion implantation](#), [Fluorine](#), [Bacterial adhesion](#)[\[PDF \(1740K\)\]](#) [\[References\]](#)Download Meta of Article [\[Help\]](#)[RIS](#)

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