

Microstructure and Corrosion Properties of Orthodontic Brackets by Laser Treatment

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The austenitic stainless steel AISI 316L has been chosen as the material for orthodontic bracket. This paper reported our studies on the surface of the stainless steel 316L treated by laser heat input. We substantiated the effects of laser heat input including the microstructure, microhardness and corrosion resistance. The results showed that laser surface treatment not only refined grain, but also enhanced microhardness of the 316L orthodontic bracket at certain heat input. Through X-ray diffraction with Cu-K α radiation, Cr_{0.19}Fe_{0.7}Ni_{0.11} was the main component phase. The corrosive characteristic of 316L orthodontic bracket with $E = 0.67$ kJ/cm was higher than that of the 316L without heat treatment.

Keywords: Orthodontic bracket, Laser heat input, Microstructure, Corrosion resistance.

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