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The Subsurface Nano Indentation Effects on Stainless Steel

By

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Abstract:

Stainless steel 316L has a lot of applications in buildings and architectures such as envelopes and clad fixations. Some alloying elements were added to improve pitting corrosion of stainless steel 316L. In order to study the effect of UV laser irradiation on Stainless steel 316L, it was irradiated by 308 nm Excimer laser at different number of pulses in the range from 2000 pulses to 50000 pulses. The nanoindentation measurements were performed on the surface of both untreated AISI 316L stainless steel and on laser irradiated samples in order to determine their hardness, stiffness and elastic properties, the effect of alloying elements on the irradiation process of Austenitic stainless steel was evaluated. The research emphasizes that laser irradiation is a promising technique for surface hardening of materials that cannot be heat treated by conventional methods.