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## Effect of laser surface texturing depth on the adhesion of electroless plated nickel coating on alumina

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**ABSTRACT:** Chemical pretreatment is often used in electroless plating process to enhance the bonding of metallic coating to ceramic substrates. In order to alter the chemical pretreatment which is not suitable for local processing and not environmentally friendly for operating personnel, laser surface texturing (LST) was applied in electroless nickel plating on alumina in this paper.

The electroless nickel plating was carried out on alumina surfaces that were either chemically coarsened or laser textured with different pit depths. The morphology of textured alumina surfaces was characterized by optical microscope and 3D laser confocal microscope, while its surface roughness was measured by a TA620 roughness tester. The adhesive performance of nickel coatings was evaluated by indentation and scratch tests.

The results showed that laser surface texturing can improve the adhesive performance of electroless plated nickel coating on the alumina samples. The critical load of the properly laser surface textured samples is more than 2 times of that of the chemically coarsened

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