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## Bond strength enhancement of zirconia-porcelain interfaces via Nd:YAG

## laser surface structuring

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## Abstract

### Objectives:

The aim of this study was to evaluate the effect of laser surface structuring on the bond strength of feldspar-based porcelain to zirconia, as compared to conventional sandblasting treatment.

### Materials and methods:

Thirty cylindrical zirconia substrates, previously sintered, were divided in three groups according to the type of surface conditioning: 1) sandblasting with 50 $\mu$ m Al<sub>2</sub>O<sub>3</sub>; 2) laser structuring ( $\varnothing$ 25  $\mu$ m holes); and 3) laser structuring ( $\varnothing$ 50  $\mu$ m holes). Porcelain was injected onto the zirconia substrates. X-ray diffractometry (XRD) was used to evaluate the influence of the laser treatment on zirconia crystallographic phases. Shear bond strength test was performed. Micrographs using SEM were used to evaluate the zirconia surface after each surface treatment and to evaluate the fracture surface after the shear test.

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