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## Paper #180358

### **Nanoleakage at the resin-dentin interdiffusion-zone of multi-mode adhesive**

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#### **Abstract**

**Objective:** To analyze the resin-dentin interdiffusion-zone, promoted by an universal adhesive system, and the nanoleakage, with transmission electron microscopy (TEM).

**Method:** Ten dentin discs were obtained from ten human caries-free molars. The Scotchbond Universal adhesive system (3M-ESPE) was used as self-etch mode and restore with Grandio SO Flow resin (Voco). The specimens were sectioned with a precision saw [IsoMet 1000 (Buehler)] in order to obtain sticks with a cross section of  $0.8 \pm 0.2 \text{ mm}^2$ . Half of the specimens were coated with two layers of fast setting nail varnish applied 1 mm from the bonded interfaces. They were immersed in ammoniacal silver nitrate (50%wt; pH=9.5) for 24h and then placed in photo-developing solution for 8h under a fluorescent light. Silver penetration at adhesive interface was examined with TEM (Hitachi H-8100), with an accelerating voltage of 100KV.

**Results:** TEM revealed a  $0.5 \mu\text{m}$  thick resin-dentin interdiffusion-zone. Hydroxyapatite crystallites were observed within this structure, with a gradation in density through the transition to the intact dentin. Some individual collagen fibers were also observed. Little nanoleakage was detected.

**Conclusion:** Scotchbond Universal adhesive, in self-etch mode revealed a homogeneous resin-dentin interdiffusion-zone, with no relevant nanoleakage, at 24h.

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