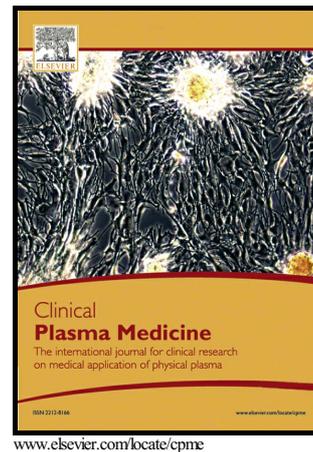


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First Insights on Plasma Orthodontics - Application of Cold Atmospheric Pressure Plasma to enhance the bond strength of orthodontic brackets

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First Insights on Plasma Orthodontics - Application of Cold Atmospheric Pressure Plasma to enhance the bond strength of orthodontic brackets

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## Abstract

### Objective

The development of an ideal adhesive system has long been subject of research. Recent studies show that treatment with cold atmospheric pressure plasma (CAP) positively affects the bonding properties of enamel. Conditioning with CAP could therefore improve the mechanical and physical properties of bracket adhesives, e.g. Glass ionomer cement (GIC).

### Material and Methods

Laser-structured brackets (Dentaurum, Ispringen) were bonded onto 60 bovine mandibular incisors using different orthodontic adhesives. For 20 specimens FujiOrthoLC (GC America Corp, Alsip, USA) was used according to manufacturer's instructions. Another 20 specimens received a 60sec CAP-treatment (kINPen med, Neoplas tool, Greifswald, Germany) before bracket bonding, of which 10 were re-moistened before applying FujiOrthoLC and 10 remained dry. Onto 20 specimens, brackets were bonded with the Composite TransbondXT (3M / Unitek, St. Paul, USA) following manufacturer's instructions. The shear bond strength of brackets on the teeth was determined with the universal testing machine Zwick BZ050 / TH3A (Zwick, Ulm, Germany).

### Results

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