

2017-979 BIOACTIVE ADHESIVE DENTAL RESTORATIVE CEMENT

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Technology description

SUMMARY

Researchers led by Alireza Moshaverinia from the School of Dentistry at UCLA have developed a novel restorative dental cement that promotes remineralization of damaged teeth.

BACKGROUND

Dental restorative materials are used to fill in cavities or to replace lost tooth structure due to trauma (i.e. a chipped tooth). One of these materials is known as glass-ionomer cement (GICs). Much like cement, powders are mixed together to form a glass-like substance that can be set and hardened to make up for lost tooth structure. GICs have great biocompatible properties that make it excellent for dentistry; however some drawbacks include low bond strength to natural tooth structure, long setting times, brittleness, poor compressive strength, poor fracture resistance, and a lack of re-mineralization. The lack of remineralization affects the long term usage of GICs since it cannot integrate itself with the underlying tooth structure and can lead to complications like secondary cavities and leakage at the GIC-tooth interface.

INNOVATION

Researchers led by Alireza Moshaverinia from the School of Dentistry at UCLA have developed a novel dental cement that promotes remineralization of damaged teeth. Their new dental cement makes improvements on current GICs. They have added components to it that makes it bond more strongly to underlying tooth structure, have reduced setting times, and have stronger mechanical properties. Most of all, this new cement promotes natural remineralization of the tooth. This promotes formation of new rich mineralized layer (dentin or enamel-like), reduces tooth sensitivity, prevents secondary cavity formation, and prevents microleakage at the tooth-cement interface. This material also has extended use cases in orthopedics along with its many dental use cases.

Application area

Dental work

Cavities

Preventive cement

Luting cement

De-sensetizer
Orthopedics (Bone cement)

Advantages

Promotes remineralization
Promotes dentin formation
Stronger mechanical properties
Shorter setting times

Institution

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