

Carbon Quantum Dot-Tagged Dental Cement:

Identifying And Removing Remnants Of Dental Cement From The Oral Cavity

CATEGORY OF INVENTION:	TECHNOLOGY READINESS LEVEL (TRL)	INTELLECTUAL PROPERTY
- Dental Technology - Nanotechnology - Biomedical Materials - Diagnostic and Imaging Technology - Medical Device and Method	TRL: 6	202341028986

PROBLEM ADDRESSED

Peri-implantitis is a significant complication in dental implant procedures, primarily caused by residual dental cement that promotes bacterial growth. This condition leads to tissue irritation, bone loss, and, in severe cases, implant failure. Effective detection and removal of cement remnants are critical to preventing these adverse outcomes and ensuring the long-term success of dental implants.



ABOUT THE TECHNOLOGY

GIC-CQD integrates fluorescent carbon quantum dots (CQDs) into conventional GIC, enabling easy visualization and removal of excess cement under UV light. It also enhances fluoride release, pH stabilization, and antibacterial action, ensuring better oral health and long-term implant success.

ADVANTAGE

- Improves detection of small cement particles, especially in hard-to-reach areas.
- Facilitates complete removal of cement residues.
- Reduces risk of peri-implantitis and related complications.
- Cost-effective due to simple synthesis of CQDs from citric acid.
- Lowers risk of complications like peri-implantitis.
- Scalable and cost-effective production.

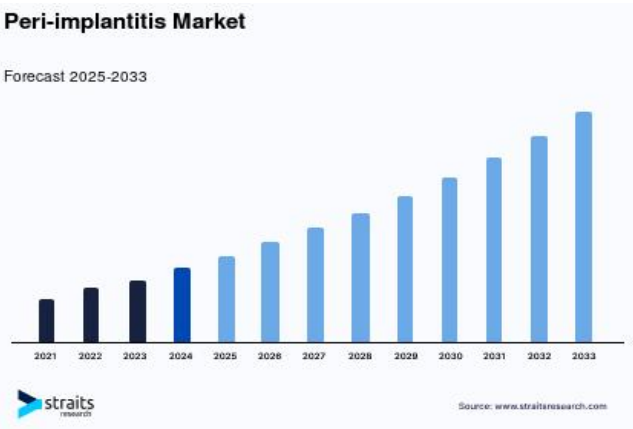
Potential Users

- Dental Materials Manufacturers
- Dental Clinics and Hospitals
- Nanotechnology Firms

USP

- Enhanced Fluorescence:** 3x higher emission intensity than conventional cement.
- Biocompatibility:** Low toxicity, >80% cell viability in tests.
- Practical Integration:** Compatible with existing dental workflows; only requires UV light.

MARKET FORECAST



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