



COLLEGE OF WILLIAM AND MARY TECHNOLOGY TRANSFER OFFICE

TITLE (AND CASE NUMBER) OF INVENTION

DENTAL ULTRASONOGRAPHY (1016)

INVENTORS

Mark K. Hinders, Ph.D.

APPLICATIONS

Dental ultrasound, real-time detection of demineralization, caries, and cracks of enamel or dentin.

SUMMARY

We have developed methods and devices for real-time, hand-held diagnostic ultrasonography for detection of: demineralization of the enamel and dentin, demineralization or caries under and around existing restorations, caries on occlusal and interproximal surfaces, cracks of enamel and dentin, calculus, periapical lesions, etc.

Ultrasonography is often a preferred diagnostic tool because it is safe, portable, easy to use, inexpensive, and capable of providing real-time data. It is also readily adaptable to specialized diagnostic applications, since interchangeable probes can be used with the same basic instrumentation. Ultrasonography is non-ionizing and entirely non-invasive, but has not yet come into widespread use in the dental office, primarily because of difficulty in coupling the ultrasound energy into and back out of the complex dental anatomy in a controlled way.

This invention solves the technical challenge of achieving efficient coupling of ultrasound energy into and then back out of the tooth. Our approach generates surface wave modes that are most sensitive to surface flaws and sub-surface flaws and can be exploited to detect such flaws at interproximal sites when a ultrasonic probe tip contacts the tooth surface at easily accessible locations.

PATENT STATUS

Patent pending.

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