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Hardness Enhancement of Human Teeth Filler (Amalgam) Using Low Level Laser

زيادة صلادة حشوة الأسنان (الأملغم) بإستخدام ليزر منخفض القدرة

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In laser Applications In Physics

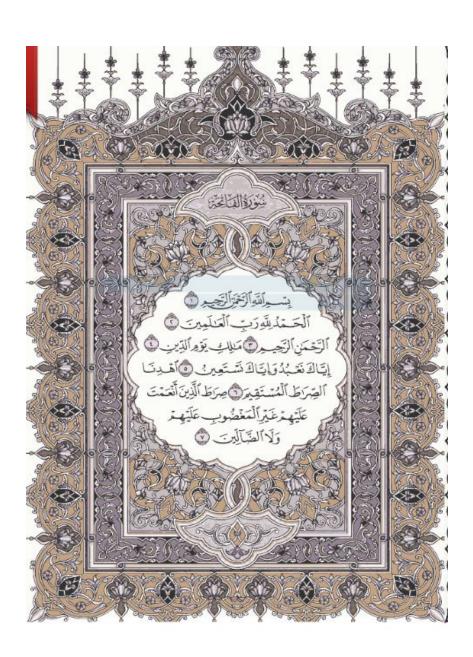
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Dedication

I dedicate this humble work to Cindy in this life who has great heart to my father.

To who gave me love and affection to the symbol of love and balm healing to pure and white heart (my mother).

To the innocent hearts and innocent souls to my sisters and my dear brother.

To my fellow students and all who contributed this work.

To my supervisor.

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Abstract

In this study, human teeth filler (Amalgam) hardness was enhanced using Low Level Laser. The amalgam samples were prepared by amalgamator

device and irradiated for 30 seconds by diode laser with wavelength of 671 nm and power of 100 mW. The hardness was measured at different time intervals (2 hr, 6 hr, 12 hr, 18 hr and 24hr) using a Rockwell hardness tester. Other sample form the same amalgam was prepared without irradiation. The irradiated samples showed a significant increase in their hardness compared to the non-irradiated samples. The irradiated sample need only 6 hours to reach the same degree of hardness of the non-irradiated sample which takes 24 hours. The results showed that the laser irradiated samples undergo re-crystallization and therefore become more hardness than the non-irradiated samples.

المستخلص

في هذا البحث تم زيادة الصلابة لحشوات الاسنان (الأملغم) في فترة زمنيه قصيرة عن طريق تشعيعها بليزر ذو قدرة واطئه. تم تجهيز العينات وخلطها بجهاز الاملغميتر وتشعيع العينة لمدة 30 ثانية بالليزر الثنائي ذو الطول الموجي 671 نانومتر وقدرة 100 ملي واط وقيست الصلابة في فترات زمنية مختلفة (2 ساعة, 6 ساعة, 12 ساعة, 18 ساعة, 19 ساعة) بإستخدام جهاز روكويل لقياس الصلابة. تم إعداد عينه ثانيه من نفس الاملغم ولكن دون تشعيع. أظهرت العينات المشععة زيادة كبيرة في صلابتها مقارنة مع العينات الغير مشععة. العينات المشععة بالليزر إحتاجت فقط الى 6 ساعات لتصل نفس درجة صلابة العينات الغير مشععة بالليزر يحدث لها إعادة بلورة ولذلك تصبح اكثر صلابة من العينات الغير مشععة.