Abstract
The use of a laser to modified the surfaces of various materials engineering is a important topics in the present time. Two types of alloys were used in this investigation; 6063Al and C11000 alloys. Samples were prepared by cutting into disc shape of radius 12 mm and then cleaning and polishing process to produce same surface roughness for all samples. Surface roughness and micro hardness were measured for all samples before and after laser shock wave treatment. different laser parameters effect on alloys surface properties were studied such as laser energy , confinement layer(different depth of DDDW) ,and number of laser pulses. The results reveal that the surface roughness are increased by 200% for 6063Al alloy and by 120% for C11000 alloy when we used laser energy of 400mj , number of laser pulses of 100 and confinement layer 5mm. While the microhardness increase by 80% for the two kinds of alloys and at the same conditions. Different measurements were carried out for all samples such as XRF, EDX, SEM , and different mechanical tests For precise and accurate results. عملية الصدمة Al ٦٠٦٣و C11000 تحسين خصائص السطح لسبائك انتقج اعخخذاو انهيضس نخحغين اعطح انًاد انهنذعيت انًخحهفت يعذ ين ان ًالخالصة بموجات الليزر بأستخدام Al ٦٠٦٣و C11000 انحاضش وقذ اعخخذو .نعين ين انغبائك اعخخذيج في هزا انعًم وهي ناضيع انًهًت في وحنظيفها واخشاء عًهيت انخنعيى نهحصل ١٢ ححضيش انًارج ورنك بخقطيعها عهى شكم قشص بقطش. حى يثم نًدهشيت ندًيع انعيناث قبم عهى خشنت يخاويت ندًيع انعيناث .حى قياط دسخت انخشنت وانصالدة ا يهى بنغبت وبعذ اخشاء عًهيت انصذيت بانهيضسانًؤثشة. حى دساعت حأثيش يخحهف عنايم انهيضس عهى انًارج ٢٠٠% طاقت نبضت انهضس وعًك طبقت انحصش وعذد نبضاث انهيضس. اظهشث انخائح صيادة انخشنت mj ٤٠٠ عنذ صيادة طاقت انهيضس انى C11000 نغبيكت % ١٢٠و بنغبت Al ٦٠٦٣باننغبت نهغبيكت اخشيج يثم نكال 80% ، بينًا اصدادث انصالدة بنغبت mm ٥وعًك طبقت انحصش ٠١١ وعذد انننبضاث انخائح .SEM و EDX و XRF و XRD انننعين وحجح نفظ انظشوف. ونقذ اخشيج يخحهف انقياعاث انهيضس ، خشنت انغطح ، انصالدة انًدهشيت انصذيت ب الكلمات المفتاحية : نهحصل عهى ادق وافضم
Enhancement of surface properties for C11000 5 , 201 7 Part (B), No. 33, Eng. &Tech.Journal, Vol. and 6063Al alloys by using laser shock wave process. 1111 INTRODUCTION mong the wide mixture of surface treatment explored for enhancing properties of materials, laser stun surface medications was created around 35 years back in the USA with specific application to improve some mechanical properties[1]. All the more as of late, surface treatment advancements have turned out to be more vital in industry to cut expenses and keep away from the requirement for extravagant materials [2]. In the field of surface treatment, with the coming of high-power lasers, laser shock processing (LSP) has risen as another and extremely encouraging system to build the resistance of metals and fatigue, wear and corrosion[3,4]. Unlike other laser applications, LSP is not a thermal rather a mechanical process for treating materials [5]. The LSP process parameters that may be varied include the power density or fluence and height of transparent layer. In order to obtain the required pressure, a transparent overlay is used to confine the plasma expansion; in this work water is used. Water tends to confine the energy and increases the[6,7]. LSP is based on plasma generation at the moment of the interaction of laser light with a specimen, which produces shock waves and plastic shifts of atomic planes in the material[8]. pulse pressure intensity against the base metal. Some researchers have been studied the effect of LSP on the mechanical

properties such as In Zhen and et al [9] investigated the effect of LSP on brass. Micro hardness, roughness, microstructure, wear resistance and friction coefficient evolution for different parameters of LSP. Their results show that the roughness increases after LSP; no ablation was observed; the microstructure has no remarkable change; hardness and the wear resistance increase as the pulse density increases . Haitham T. Hussein,1 Abdulhadi Kadhim and et al [10] were studied the Influence of laser treatment on mechanical properties, wear resistance, and Vickers hardness of aluminum alloy was studied. The specimens were treated by using Nd:YaG laser of energy 780mj, wavelength 512 nm, and duration time 8 ns. And other researchers [7,11,12]also were investigated the increase of microhardness and surface roughness with the increase of laser pulse energy and the influence of the thickness of the confining layer on microhardness and surface roughness for different alloys .