



الآية

قال تعالى:

بسم الله الرحمن الرحيم

﴿النُّورُ السَّمْوِيُّ الْأَنْوَارُ ۝ مَثَلُ نُورٍ كَمِثْلِ كَأَةٍ فِيهَا مِصْبَاحٌ الْمِصْبَاحُ فِي جِجَارَةٍ ط

الزُّجَّاجَةِ كَأَةً تَهْلُو كَبْدُرِي يُوقَدُ مِنْ شَجَرٍ هَبَّارٍ كَرِيهُ يُتَوَنَّلُ لِشَرِّ قُوَّةٍ لَا غَرْبِيَّةٍ أَدْرِي تَهْلُو
يُضْرِي عُلُو لَمْ يَسْأَلْهُ نَارٌ ۝ نُورٌ عَلَى نُورٍ ۝ يَهْدِي اللَّهُ لِنُورِهِ مَن يَشَاءُ يُضْرِبُ اللَّهُ

۝ الْأَمْثَلُ لِلنَّاسِ ۝ اللَّهُ بِكُلِّ شَيْءٍ عَلِيمٌ ﴿

صدق الله العظيم

سورة النور، الآية (35)

Dedication

To my:

Parents

Husband

Sisters

Prather's

Acknowledgment

I would like to express my thanks and deep respect to those who help me in this work especially my supervisor Dr: Mohammed Sulieman, for this kindness encouragement , advices and great help , also I would like to thank for lab of Sudan university .

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Abstract (English)

In this study electroplating of Iron with Copper on different electroplating conduction were studied concentration of Copper, current, density, time and PH were carried out to investigate the relation between the Wight, density of Copperelectrodeposition.

From the above systematic investigation the suitable conditions for Copper electroplating were found as follow:

PH(4), Concentration of Copper sulphate in bath(0.08)M,

Current(0.06)A/cm², Time to be plated(20)min. (in room temperature)

Abstract (Arabic)

في هذا البحث تم دراسه الطلاء الكهربى للنحاس على سطح من الحديد, في عدہ ظروف من الطلاء مثل تركيز CuSO_4 , التيار, الكثافه, درجه الحراره و زمن الطلاء , و ذلك للتعرف على العلاقه بين الوزن والكثافه لطبقه الطلاء بالنسبه للظروف السابقه.

وقد وجد ان الظروف المناسبه لعملية الطلاء كانت:

$\text{PH}(4)$, تركيز $\text{CuSO}_4(0.08)\text{M}$, التيار $0.06\text{A}/\text{cm}^2$, الوقت الانسب للطلاء (20) دقيقه, (في درجه حراره الغرفه).