

إستهلال

قال تعالى: (وَقُلِ اعْمَلُوا فَسَيَرَى اللَّهُ عَمَلَكُمْ وَرَسُولُهُ وَالْمُؤْمِنُونَ ۗ وَسَتُرَدُّونَ إِلَىٰ عَالَمِ
الْغَيْبِ وَالشَّهَادَةِ فَيُنَبِّئُكُمْ بِمَا كُنْتُمْ تَعْمَلُونَ)

صدق الله العظيم

سورة التوبة - الآية 105

Dedication

To

My father

Mother

Brother

Sister

Acknowledgment

Firstly I would like to thank Allah, Almighty, who assisted me to complete this research.

I would like to extend my sincere thanks to Dr. Mohammed Suleiman, who provided me with the valuable information that enabled me to accomplish this work.

Thanks to technicians staff in department of the chemistry in Sudan University of Science and Technology.

Abstract

In this research the effect of current density, temperature, pH, concentration of nickel chloride solution and electroplating time on nickel electroplating of copper from glycine and acetate baths were investigated.

It was observed that a bath concentration 0.5 mole/L of nickel chloride solution gave the best nickel deposit at 0.5 A/cm² for 10 min at concentration of both sodium sulphate and ammonium chloride were 0.2 mole/L and the suitable pH was found to be 5.

The effects of glycine and sodium acetate concentration of baths were studied and the weight of copper plate increased according to increasing their concentration in the bath which obey Faraday law.

The corrosion test was applied to compare between the copper sheet before and after the plating process. The result obtained showed that the plating process greatly enhanced the corrosion resistance of the plated copper over unplated sheet.

المستخلص

في هذا البحث تمت دراسة أثر كثافة التيار و درجة الحرارة و الرقم الهيدروجيني و تركيز كلوريد النيكل و زمن الطلاء بالنيكل على النحاس من حمامات الجلايسين و الخلات تم التحقق منها.

لاحظنا أن تركيز الحمام 0.5 مول/لتر من كلوريد النيكل أعطى أفضل ترسيب عند 0.5 أمبير/سم² لمدة 10 دقائق في وجود تركيز 0.2 مول/لتر لكل من كبريتات الصوديوم و كلوريد الأمونيوم عند الأس الهيدروجيني 5 .

تمت دراسة أثر تركيز حمامات الجلايسين و الخلات و وجدنا أن وزن شريحة النيكل يزيد بزيادة تركيزهما في الحمامات تحقيقا لقانون فاراداي.

قمنا بتطبيق إختبار التآكل للمقارنة بين شريحة النحاس قبل وبعد عملية الطلاء . النتائج المتحصل عليها أظهرت أن عملية الطلاء زادت من مقاومة التآكل للشريحة المطلية أكثر من الشريحة الغير مطلية.

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