

# آستفتاح

قال الله تعالى:

اللَّهُ نَفْسًا لَّائِلًا وَسِعَهَا لَّهُ مَا كَسَبَتْ وَعَلَيْهَا مَا  
كَسَبَتْ رَبَّنَا لَا تُؤَاخِذْنَا إِنْ نَسِينَا أَوْ أَخْطَأْنَا رَبَّنَا  
وَلَا تَجْعَلْ فِي قُلُوبِنَا إِهْتِمَامًا بِمَا كَفَرْنَا حَتَّى نَمُنَّ  
بِآيَاتِكَ وَلِنَكْفُرَ بِمَا كُنَّا نَمُنُّ بِهَا رَبَّنَا إِنَّكَ  
أَعْلَمُ بِمَا فِي قُلُوبِنَا رَبَّنَا لَا تُؤَاخِذْنَا إِنْ نَسِينَا  
أَوْ أَخْطَأْنَا رَبَّنَا وَلَا تَجْعَلْ فِي قُلُوبِنَا إِهْتِمَامًا  
بِمَا كَفَرْنَا حَتَّى نَمُنَّ بِآيَاتِكَ وَلِنَكْفُرَ بِمَا كُنَّا  
نَمُنُّ بِهَا رَبَّنَا إِنَّكَ أَعْلَمُ بِمَا فِي قُلُوبِنَا {

صدق الله العظيم

البقرة - الآية (286)

# **Dedication**

To my

parents, husband, children, brothers and sister.

# **Acknowledgment**

My greatest thanks are due to Allah the most Compassionate and the most Merciful.

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**Abstract:**

In this research the corrosion behavior of some metals in different acid solutions using weightloss technique were studied. The magnitude of corrosion of these metals in (0.4, 0.6, 0.8, 1 M) solutions of NaCl, HCl, H<sub>2</sub>SO<sub>4</sub>, and HNO<sub>3</sub> were investigated for an exposure period from 3 to 9 days. Rate of corrosion in metals followed this order: iron >aluminum, while rate of corrosion in aqueous media followed this order: HNO<sub>3</sub>> H<sub>2</sub>SO<sub>4</sub>>HCl>NaCl. It has been observed that concentration increases lead to increase the rate of corrosion. Further study on the corrosion kinetics has revealed that the rate of reaction of the metals increases with increase in solution concentration, while the half life decreases with increase of solution concentration.

The corrosion behavior of iron and aluminum in the 1M HNO<sub>3</sub>, 1M H<sub>2</sub>SO<sub>4</sub>, 1MHCl and 1M NaCl solutions containing various weight of urea and acetanilide range (0.3, 0.5, 1, 1.5 g) at room temperature were investigated, using weight loss measurement, and atomic absorption analysis, to find the amounts of metal in acidic solutions in presence and absence of urea and acetanilide. It is found that the inhibition efficiency (IE) and the corrosion rate increased by increasing the weight of urea and acetanilide. Urea and acetanilide inhibitors acts as a cathodic inhibitor. The results showed that urea caused protection efficiency more than acetanilide because the main functional groups in urea molecule contains two amino groups

في هذا البحث اجريت دراسة لسلوك تأكل المعادن في بعض المحاليل المختلفة بتراكيز مختلفة وهي (M1,0.8) (0.4, 0.6) من حامض النتريك , حامض الكبريتيك , حامض الهيدروكلوريك , محلول كلوريد الصوديوم وذلك بأستخدام تقنية فقدان الوزن وكانت فترة غمر المعادن في المحاليل (3, 5, 7, 9 ايام) ووجد ان معدل التآكل في المعادن بالترتيب :الحديد < الالمونيوم وان التآكل في الوسط المائي يأتي بهذا الترتيب :حامض النتريك <حامض الكبريتيك < حامض الهيدروكلوريك < محلول كلوريد الصوديوم وبهذا فأن اي زيادة في التركيز تؤدي الي زيادة في معدل التآكل . وكشفت دراسة لحركية التآكل ان معدل رد فعل المعدن يزيد بزيادة تركيز المحلول بينما يقل عمر النصف مع زيادة تركيز المحلول .

تم دراسة السلوك التآكلي للحديد والالمونيوم في مجموعة من المحاليل هي 1مولاري من حامض النتريك و1مولاري من حامض الكبريتيك و1مولاري من حامض الهيدروكلوريك و1مولاري من محلول كلوريد الصوديوم على مدى من الاوزان المختلفة لليوريا والاستنالايد كمثبطات وتراوحت اوزانها بين ( 0.3 ، 0.5 ، 1 ، 1.5 g ) في درجة حرارة الغرفة وتمت هذه الطريقة بأستخدام تقنية تقدير الوزن المفقود للحديد والالمونيوم نتيجة التآكل.وقد اظهرت النتائج ان اليوريا خفضت عملية التآكل اكثر من الاستنالايد وذلك لوجود المجموعات الوظيفية في اليوريا وهي ذرتي النتروجين .

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