

hossam maghraby



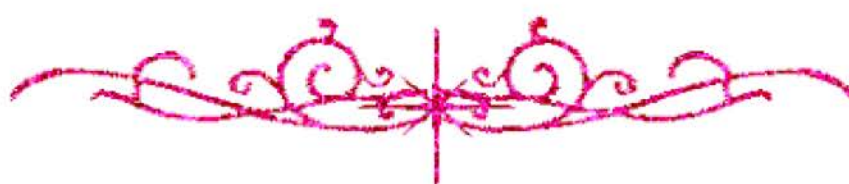
# بسم الله الرحمن الرحيم



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# شبكة المعلومات الجامعية التوثيق الالكتروني والميكرو فيلم





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# جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

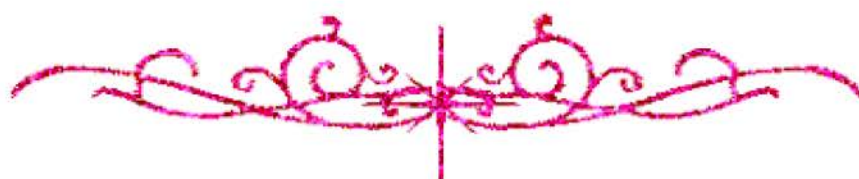
## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



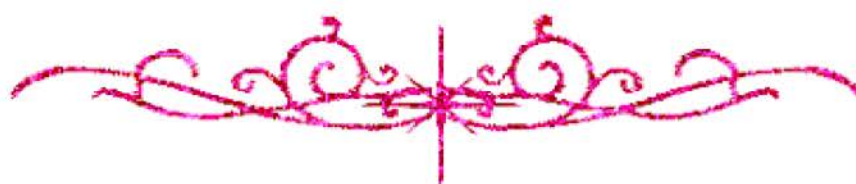
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شبكة المعلومات الجامعية



# بعض الوثائق الأصلية تالفة

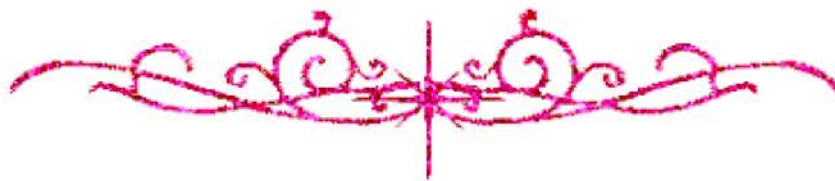




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بالرسالة صفحات  
لم ترد بالأصل



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Metallurgical and Materials Engineering Department




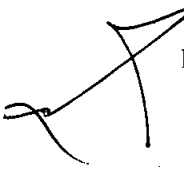
# STUDY ON WELDABILITY OF 50/50 Ni/ Cr ALLOY

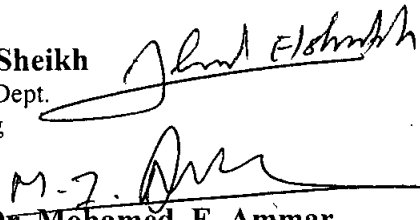
A Thesis  
Submitted to  
Metallurgical and Materials Engineering Department  
Faculty of Petroleum and Mining Engineering  
Suez Canal University

For  
**The Master Degree of Science**  
In  
Metallurgical and Materials Engineering  
By  
**Hany Mohamed Masoud Farag**  
B.Sc. in Mechanical Engineering, 1988  
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2006

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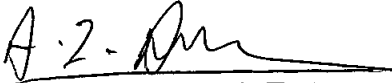
# **STUDY ON WELDABILITY OF 50/50 Ni/ Cr ALLOY**

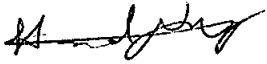
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**2006**





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<b>Department</b>	<b>Metallurgical and Materials Engineering Department</b>
<b>Location</b>	<b>Suez - Egypt</b>
<b>Degree</b>	<b>Master Degree of Science</b>
<b>Date</b>	
<b>Language</b>	<b>English</b>
<b>Supervision Committee</b>	<b>Prof. Dr. Mohamed E. Ammar, Ass. Prof. Dr. Hamed A. Nagy</b>

#### **English Abstract**

**In the present study observing the metallurgical transformations due to the high service temperature, and the effect of this transformation on mechanical properties and weldability of the alloy of interest (as cast and after service). Various heat treatment regimes at different temperatures and welding at different heat inputs, several facts about the phase structure evolution and its relation to the deterioration in mechanical properties. It is related to precipitation of Cr-rich  $\alpha$ -phase inside  $\gamma$ -phase at low service temperatures (close to 700°C). This precipitation gets slightly enhanced if the alloy is previously heated at higher temperatures (1050°C) due to the high solubility of Cr in the  $\gamma$ -phase at these temperatures as compared with that at service temperatures (close to 700°C). Also heat input controls the hardness profile across the weld, with higher possibility of formation of local hard zone and hard throat as the cooling rate decreases, especially for the as-cast alloy. Hard throat could be avoided by either increasing or decreasing the heat input beyond a critical value.**

<b>Key words</b>	<b>Superalloy, Heat Treatment, Microstructure, weldability, Heat input, local hard zone, hard throat</b>
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# ABSTRACT



