

# بسم الله الرحمن الرحيم



**HOSSAM MAGHRABY**



# شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



**HOSSAM MAGHRABY**

# جامعة عين شمس

## التوثيق الإلكتروني والميكروفيلم

### قسم

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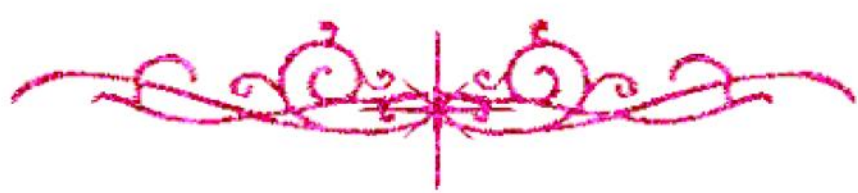


A decorative flourish in red ink, consisting of a central vertical line with symmetrical, flowing, scroll-like patterns on either side.

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# بعض الوثائق الأصلية تالفة



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بالرسالة صفحات

لم ترد بالأصل



HOSSAM MAGHRABY

**THERMAL SPRAYING OF WEAR-RESISTANT COATINGS ON  
ALUMINUM ALLOYS BY CAST IRON POWDERS**

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*Thesis*

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## **APPROVAL SHEET FOR SUBMISSION**

**Title of Ph.D. Thesis:**

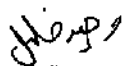
**“THERMAL SPRAYING OF WEAR-RESISTANT COATINGS ON  
ALUMINUM ALLOYS BY CAST IRON POWDERS”**

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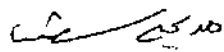
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## **ABSTRACT**

Name of Candidate: Magdi Farouk Morks

Title of Ph.D. Thesis: Thermal Spraying of Wear-Resistant Coatings on Aluminum Alloys By Cast Iron Powders

Degree: (Ph.D.) Thesis, Faculty of Science, Department of Chemistry-Cairo University

The objective of this study is to improve the wear resistance properties of dicasting aluminum alloy materials by spraying superior wear-resistant coating of cast iron via plasma-spraying approach. Since graphite in cast iron is the main role for superior wear resistance, our objective is not only to spray cast iron, but also to get the optimum spray parameters required for graphitization. The effects of spray parameters such as substrate temperature, chamber pressure, particle size, spray distance and powder composition on splat morphology, microstructure, pore formation and graphitization have been studied. The coating microstructure (including graphite) was examined by X-ray diffraction and observed by SEM. The wear and friction properties were evaluated.

Key words: cast iron, plasma spraying, aluminum alloys, microstructure, graphite, solidification, wear, friction

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## To My Family

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# INTRODUCTION