بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

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

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تحفظ هذه الأقراص المدمجة بعيدا عن الغبار

MONA MAGHRABY

THERMAL ANALYSIS, SOLIDIFICATION BEHAVIOUR AND MICROSTRUCTURE OF ALUMINUM – MAGNESIUM ALLOYS WITH ADDED ZIRCONIUM AND SAMARIUM

By

Karamullah Mohamed Ahmed Eisawi

A Thesis Submitted to the
Faculty of Engineering at Cairo University
in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE
in
METALLURGICAL ENGINEERING

FACULTY OF ENGINEERING, CAIRO UNIVERSITY
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Title of Thesis:

THERMAL ANALYSIS, SOLIDIFICATION BEHAVIOUR AND MICROSTRUCTURE OF ALUMINUM – MAGNESIUM ALLOYS WITH ADDED ZIRCONIUM AND SAMARIUM

Key Words:
Thermal Analysis, Grain Refining, Microstructure, Sm and Zr, Al-Mg Alloy

Summary:
A series of Aluminum Magnesium alloys with high and low levels Magnesium with addition of high and low levels of Zirconium and Samarium was prepared. Thermal analysis was implemented by using thermocouple K-type to investigate the effect of Zr and Sm addition. Microstructure was examined by optical microscopy and scanning electron microscopy. It was found that intermetallic phases are transformed into Chinese script structure when adding Sm for both high and low level of Mg addition in Al-Mg alloys.

Disclaimer

I hereby declare that this thesis is my own original work and that no part of it has been submitted for a degree qualification at any other university or institute.

I further declare that I have appropriately acknowledged all sources used and have cited them in the references section.

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Signature:

Dedication

I dedicate this thesis to my parents. I dedicate this thesis to my father (Dr. Mohamed Eisawi) that dedicated all his life as an investment in raising us and hope this thesis to be one step towards his dream. I deeply dedicated this thesis to my mother (Mrs. Hoda Salem) that passed away in 2019. She wishes to see me with the Master degree certificate before going to the afterlife; I'm sure she is proud of me to obtain my Master degree and continue my path of teaching and research.

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