hossam maghraby

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

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شبكة المعلومات الجامعية

شبكة المعلومات الجامعية
التوثيق الالكتروني والميكروفيلم

hossam maghraby

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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

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بالرسالة صفحات لم ترد بالأصل

بسم الله الرحمن الرحيم

Effect of the Various Parameters on the Performance of Hydrogen Storage in Intermetallic Compounds

Thesis

Submitted in partial fulfillment

For

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In

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By

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To My Parents

To My Wife

To My Sons

TABLE OF CONTENTS

SUMMARY

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Hydrogen is an extraordinary clean, high quality fuel that could be used instead of oil and natural gas for transportation, heating and power generation when hydrogen is burned, the primary combustion is water vapor. No carbon monoxide, carbon dioxide, sulfur dioxide, or particulate mater is burned in air at high temperatures, however, nitrogen oxides are formed. Due to its low density and the difficulty of liquefaction, it was tried to store it in the form of hydrides of some intermetallic compounds with the possibility of recovery at any time by just warming or releasing the pressure above the hydride.

To study the effect of various parameters on the performance of hydrogen storage in intermetallic, a number of experiments were carried out using the intermetallic compounds $TiFe_{0.9}Mn_{0.1}$ and $TiFe_{0.8}Ni_{0.2}$ which were hydrided and dehydrided under constant volume and pressure. The apparatus used for the process was constructed using type 316 stainless steel.

The activation of two alloys were studied by using two different methods:

1. By using the closed cycles methods (I) at various initial pressures ranging from 0.6 to 6.6 MPa for two alloys and the samples were hydrided and dehydrided without intercycle evacuation of the apparatus.

2. By using the open cycle method (II) at specific initial pressure 6.325 MPa, the samples were hydrided and dehydrided with intercycle evacuation of the apparatus after each cycle.