

# Dedication

TO MY PARENTS

TO MY SISTER

MY BROTHERS

MY FRIENDS

TO EVERY ONE WHOME

GAVE ME A BIT OF

WISE ADVICE

## ACKNOWLEDGEMENT

*I am heartily thankful to my supervisor, A.AmiraAnwerbabiker , whose encouragement, guidance and support from initial to the final level enabled me to develop an understanding of the subject.*

*Finally , yet importantly ,I would like to express heartfelt thanks to my beloved parents for their blessing ,my friends for their help and wishes for the successful completion of this project.*

Wessam-Noura

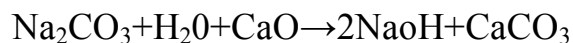
## **Abstract:**

The study is aim to prepared sodium hydroxide solution from available material in nature (natron and quick lime).

This method is so easy,simple, it done in normal condition in labrotary and use simple equipment.

Natron solution was prepared by dissolved in warm water and quick lime was added batchly with heating in water bath.

To get sodium hydroxide solution with high concentration (3.4M) by this reaction:



Sodium hydroxide is used in chemical analysis and some chemical industries and also used over large range in papers industries with sodium sulfide and other uses.

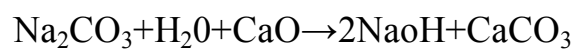
## ملخص البحث:

تهدف الدراسة التحضيرية لمحلول هيدروكسيد الصوديوم من مواد متوفرة في الطبيعة (العطرون والجير الحي).

هذه الطريقة سهلة وبسيطة وتجرى في المعمل في الظروف العادية و تستخدم فيها أدوات بسيطة.

يحضر محلول العطرون بإذابة الماء الدافئ،

ثم يضاف الجير الحي لمحلول العطرون بالتدريج مع التسخين في حمام مائي يتم الحصول على محلول هيدروكسيد الصوديوم بتركيز عالٍ (M3.4). عن طريق التفاعلات التالية:



هيدروكسيد الصوديوم مادة قياسية ثانوية تستخدم في التحليل الكيميائي وفي بعض الصناعات الكيميائية ويستخدم على نطاق واسع في صناعة الورق مع كبريتيد الصوديوم وله استخدامات كثيرة.

## List of Content

Title	Page number
Dedication	I
Acknowledgement	II
Abstract	I II
ملخص البحث	IV
List of content	V
List of figures	IX
List of Table	XI
Chapter One <i>Introduction</i>	
Sodium hydroxide	1
Identification of sodium hydroxide	2
Thermo chemistry of sodium hydroxide	3
Hazards	3
Physical properties of sodium hydroxide	4
Chemical properties of sodium hydroxide	4
Reaction with acids	4
Reaction with acidic oxide	5
Reaction with amphoteric metals and oxides	5
Precipitant	5
saponification	6

Uses	6
Chemical pulping	7
Tissue digestion	7
Etherification and trans esterification reagent	8
Food preparation	8
Cleaning agent	9
Historical uses	10
Safety	10
Production	10
Natron	12
Calcium oxide (quicklime)	13
Properties	13
Preparation	14
Usage	14
Sodium	16
properties	17
Calcium	18
Iron	18
Instrument	19
Introduction	19
Flame photometer	19
Atomic absorption spectroscopy	22

<b>Chapter tow</b> <i>Material and Methods</i>	
Materials	26
Equipments	26
Method	27
Preparation of solution	27
Preparation of hydrochloric acid	27
Standardization of hydrochloric acid	27
Determination of carbonate in natron sample	27
Determination of sodium in natron sample	27
Determination of potassium in natron sample	27
Determination of Iron in natron sample	28
Determination of silica in natron sample	28
Preparation of sodium hydroxide(by using quick lime)	28
Determination of sodium hydroxide concentration	28
Determination of sodium in sodium hydroxide	28
Determination of potassium in sodium hydroxide	28
<b>Chapter three</b> <i>Results and Discussion</i>	
Result	29
Dissection	38
Calculation	39
Conclusion	42

Recommendations	42
References	43



## List of Figures

Figure No	Title	page No
1.1	Structure of sodium hydroxide (crystalloid).	1
1.2	The grade sodium hydroxide to be used of drain cleaner.	9
1.3	Structure of calcium oxide(crystalloid).	13
1.4	Position of sodium in period table.	16
1.5	Part Flame photo meter.	20
1.6	Schematic representation of flame photometer.	21
3.1	Graph explain the relation between concentration and emission to determine the concentration of sodium in natron.	30
3.2	Graph explain the relation between concentration and emission to determine the concentration of potassium in natron.	31
3.3	Graph explain the relation between concentration and emission to determine the concentration of sodium in sodium hydroxide.	34
3.4	Graph explain the relation between concentration and emission to determine the concentration of sodium in sodium hydroxide.	35

3.5	graph explain the relation between concentration and emission to determine the concentration of potassium in sodium hydroxide .	36
3.6	graph explain the relation between concentration and emission to determine the concentration of potassium in sodium hydroxide .	37

## List of Table

Table No	Title	Page No
1.1	Show the Identificaton of sodium hydroxide.	2
1.2	Show the thermo chemistry of sodium hydroxide.	3
1.3	Show the hazard of sodium hydroxide.	3
1.4	Show the properties of quick lime.	13
1.5	Show the properties of sodium.	17
3.1	Standardization of hydrochloric acid.	29
3.2	Determination of carbonate in natron sample.	29
3.3	Determination of sodium in natron sample.	30
3.4	Determination of potassium in natron sample.	31
3.5	Determination of iron in natron sample.	32
3.6	Determination of silica in natron sample.	33
3.7	Determination of sodium hydroxide concentration.	33
3.8	Determination of sodium in sodium hydroxide(by using 5g quick lime).	34
3.8	Determination of sodium in sodium hydroxide(by using 10g quick lime)	35

3.9	Determination of potassium in sodium hydroxide(by using 5g quick lime)	36
3.9	Determination of sodium in sodium hydroxide(by using 10g quick lime)	37