



Faculty of Science

*Extraction of uranium and valuable elements  
from Abu Hamata poly-mineralized  
sedimentary rocks, Southwestern Sinai, Egypt.*

*Thesis Submitted for  
Ph.D. Degree of Science in Chemistry  
(Analytical and Inorganic)*

*By*

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*(M. Sc. 2009)*

***Assistant lecturer-Nucar Materials Authority***

*To  
Chemistry Department  
Faculty of Science  
Ain Shams University*

**2014**



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## *Approval Sheet*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ  
(( إِنَّ اللَّهَ مَعَ الَّذِينَ اتَّقَوْا وَالَّذِينَ  
هُمْ مُحْسِنُونَ ))

صدق الله العظيم

(النحل آية : ١٢٨)

# **DEDICATION**

***I dedicate this work to:***

- ***My parents who supported and encouraged me all of the time.***
- ***My wife for her patience, efforts and generous support.***
- ***My sweet children, Mahmoud, Israa & Karma.***
- ***My brothers & sisters.***
- ***And all my family.***

***Walid***

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## List of Abbreviations

|               |                             |
|---------------|-----------------------------|
| <b>B</b>      | Boron                       |
| <b>Ce</b>     | Cerium                      |
| <b>Conc.</b>  | Concentration               |
| <b>EDX</b>    | Energy dispersive x-rays    |
| <b>h</b>      | Hour(s)                     |
| <b>IX</b>     | Ion exchange resin          |
| <b>Eluex</b>  | IX+SX                       |
| <b>L.O.I.</b> | Loss of ignition            |
| <b>Ln</b>     | Lanthanides                 |
| <b>N.M.A.</b> | Nuclear Materials Authority |
| <b>SX</b>     | Solvent extraction          |
| <b>S/L</b>    | Solid/liquid                |
| <b>t</b>      | Ton                         |
| <b>U</b>      | Uranium                     |
| <b>V</b>      | Vanadium                    |
| <b>w.s.r.</b> | Wet settled resin           |
| <b>XRD</b>    | X-ray diffraction           |
| <b>Y.C.</b>   | Yellow cake                 |
| <b>Y</b>      | Yttrium                     |