



Ain Shams University  
Faculty of women for Arts, Science and Education  
Chemistry Dept.

**Synthesis and characterization of some new cationic surfactants as  
additives to nanocomposites for improvement of some properties  
of drinking water pipes**

A Thesis  
Submitted for  
Degree of Philosophy Doctor (Ph.D.)  
In  
Organic Chemistry  
Present by

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(M.Sc., Organic Chemistry, 2014)

To  
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# ***QUALIFICATION***

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## **Note**

Beside the work carried out on this thesis, the candidate attended Pre- Ph.D. courses for six months in organic chemistry covering the following topics:-

- Identification of an unknown organic compound from physical properties, chemical reactivity and infrared spectroscopy.
- Structure Determination of Organic Compounds
- Organic Qualitative Analysis.
- Isotopes: theory, principles and practicalities.
- Information sources in chemistry.
- Chemical Literature.
- Chemistry of Nano materials.
- Application of Nanotechnology in Chemistry.
- Synthesis of Organic and Bioorganic Nanoparticles.
- Techniques for synthesis of nano materials.

She passed successfully a written examination in these topics.

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# *DEDICATION*

## **TO MY PARENTS**

I have to thank Allah for choosing both of you to be my parents.

## **TO MY DEAR HUSBAND**

Thank you for his continuous support and helping me

## **TO MY DEAR SON**

## **TO MY DEAR BROTHER**

## **TO MY DEAR SISTER**

Thank you for helping me



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَعَلَّمَكَ مَا لَمْ تَكُنْ تَعْلَمُ  
وَكَانَ فَضْلُ اللَّهِ عَلَيْكَ عَظِيمًا

صَدَقَ اللَّهُ الْعَظِيمُ



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