



**Chemistry Department**

**Innovative Separation of Nano-particles,  
Heavy Metals and Dyes from Industrial  
Effluents via Electro-Flotation**

The sis submitte d

By

**INGE OSAMA ABDEL-LATIF ABDEL-WAHED**

M.Sc. in Chemistry 2012

To

Department of Chemistry,  
Faculty of Science, Ain Shams University  
For Philosophy Doctor (Ph.D.) in Chemistry

Under the supervision of

**Prof. Dr. Fouad Ibrahim El-Hosiny**

Professor of Physical Chemistry, Faculty of Science, Ain  
Shams University

**Prof. Dr. Khaled Abdel-Aal Selim**

Head of Mineral Processing Department, Central Metallurgical  
Research and Development Institute (CMRDI)

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