

# **Dual Functionalization of Single Walled Carbon Nanotubes with Different Moieties and Doxorubicin**

## **Students:**

zaina Amer

Aya Sharif

Jaffar Hindi

## **Supervisour**

Dr. Mohyeddin Asali

## **Abstract**

Cancer disease management undergo different fields, one of them is chemotherapy which is one of the essential strategies. however due to many side effects that could result because of it and harmfully affecting normal cells, many researchers are trying to develop new drug delivery systems that could reduce the used doses and decrease the side effect. Many efforts have been applied in this field in order to develop drug delivery systems based on carbon nanotubes. The object of this research is to develop a new nano-anticancer system based on the dual functionalization of single-walled Carbon Nanotubes (SWCNTs) using covalent functionalization of SWCNTs an anticancer drug (Doxorubicin) and non covalently with Pyrene-functional groups compounds. The successful functionalization was indicated when good dispersibility of the functionalized single walled carbon nanotubes were appeared in solubility tests. The cytotoxicity effect of the compounds against HepG2 cells was studied at different concentrations and compared with Dox alone. with the highest effect observed by 60 mcg/ml of –SWCNT (11), and showing a variability of cytotoxicity with all the three functional groups compounds (compound 8, compound 9, and compound (11).