

Fluorescent (polymer-dots) bioconjugates for cancer theranostic applications

Wael Mahmoud Ahmed Darwish

National Research Centre, Egypt

Highly fluorescent carbon dots (CDs) and quantum dots (QDs) of average particle size of several nanometers were prepared and characterized. Biocompatible polymers such as polyethylenimine (PEI) and carboxylic-ended polycaprolactone (PCLCOOH) were used for preparation of biocompatible (polymer-dots) nanoconjugates via either chemical or electrostatic interactions. Further, this modality allowed for functionalization of the bioconjugates with cancer targeting agents such as folate and/or antibodies. The prepared conjugates were characterized using electron microscopy (SEM and TEM), fluorescence microscopy (FM), confocal laser scanning microscopy (CLSM), flowcytometry and atomic absorption spectroscopy (AAS). The present study opens new avenue for the application of fluorescent polymer conjugates in several cancer theranostic applications.

Biography

Wael Mahmoud Ahmed Darwish is an Associate Professor of Polymer Science and Technology in the Department of Polymers and Pigments, National Research Centre, Egypt. He was awarded his Doctor degree at Philips University, Germany in 2006. He is a Principle Investigator in a current project concerning photodynamic therapy of cancer and Co-Investigator in many current projects in the field of the use of gold nano-rods in cancer therapy. He was a PI and successfully ended two projects in the field of diagnostic applications of fluorescent materials. He participated as a key-note speaker in many workshops concerning the use of nanotechnology in theranostic applications. His research interests include polymers, nanotechnology, cancer diagnosis and therapy and laser technology.

waeldarwin78@yahoo.com