

STUDY OF THE OPTICAL AND FLUORESCENCE PROPERTIES OF THE COMPLEX OF CARBON QUANTUM DOTS AND COMPOUNDS WITH ANTICANCER PROPERTIES

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Quinone-based drugs such as doxorubicin (DOX), daunorubicin, etc. are widely used in cancer chemotherapy. Their use has adverse side effects such as dilated cardiomyopathy and heart failure. This has led to the development of controllable, nanocarrier-based drug delivery systems that allow the targeted release of drugs at specific locations. Potential candidates for the development of such systems, heavy metal-free carbon quantum dots (CQD), are receiving increasing attention.

Carbon quantum dots (CQDs), with advanced surface functionalization and luminescent properties that allow controlling the intracellular localization of nanocarrier-drug complexes, are a promising nanostructured material for theranostics, as they can simultaneously provide imaging and therapeutic effects. Theranostic agents must meet several requirements. The most important condition is that it delivers the medicine to the target. For this, it must be soluble in water and stable under physiological conditions. The nanocomplex must be biocompatible. It is highly desirable that it can be tracked optically to monitor its pharmacodynamics and accumulation in cancer tissue.

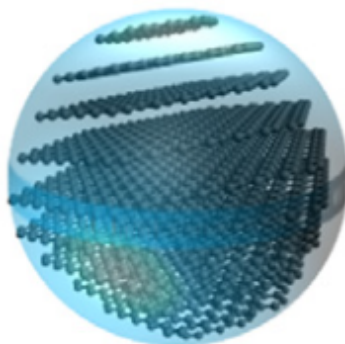


Fig. 1. Model structure of carbon quantum dots (CQD)

During this study, we intend to investigate the stability, optical and fluorescent properties of nanocomplexes of CQDs and compounds with anticancer properties using spectroscopic methods.