SYNTHESIS, SPECTROSCOPIC INVESTIGATION, AND MOLECULAR INTERACTIONS BETWEEN ACIVICIN AND CdSe QUANTUM DOTS

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CHALCOGENIDE LETTERS
Volume: 12 **Issue:** 7 **Pages:** 339-347
Published: JUL 2015
View Journal Impact

Abstract

Water-Soluble and fluorescent thiol capped CdSe quantum dots (QDs) were synthesized by chemical rout. The structure of CdSe QDs was investigated by means of X-ray diffraction (XRD), energy-dispersive X-ray analysis (EDX), UV-visible, Fourier transform infrared (FT-IR) spectroscopy and transmission electron microscopy (TEM). The crystal phase of the CdSe QDs confirmed with XRD diffraction technique. The average size of CdSe QDs was calculated to be 3 nm by different spectroscopic techniques. CdSe capped with mercaptopropionic acid (MPA) shows a characteristic fluorescent peak at 590 nm, which is highly dependant on the pH value. The interaction of the water-soluble MPA-CdSe and acivicin (AC) was investigated in 50 mM sodium acetate buffer pH 7.4 by fluorescence spectroscopy. The interaction between acivicin and MPA-CdSe shows a dynamic quenching process. Analysis of the circular dichorism (CD) spectra indicated higher interaction of the MPA-CdSe-AC complex with human serum albumin than the individual AC drug.

Keywords

Author Keywords: CdSe QDs; Antibiotics Interactions; Acivicin; Optical Properties; Quenching Mechanisms

KeyWords Plus: PROTEIN SECONDARY STRUCTURE; CIRCULAR-DICHROISM; SERUM-ALBUMIN; CDTE; NANOPARTICLES; CYTOTOXICITY; FLUORESCENCE; ACID

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Funding

Funding Agency	Grant Number
Deanship of Scientific Research (DSR), King Abdulaziz University, Jeddah	363-005-D1433
DSR	

View funding text

Publisher

NATL INST R&D MATERIALS PHYSICS, ATOMISTILOR STR 105 BIS, PO BOX MG-7, BUCHAREST-MAGURELE, 077125, ROMANIA

Categories / Classification

Research Areas: Materials Science; Physics

Web of Science Categories: Materials Science, Multidisciplinary; Physics, Applied

Document Information

Document Type: Article

Language: English

Accession Number: WOS:000359209900001

ISSN: 1584-8663

Journal Information

Impact Factor: Journal Citation Reports

Other Information

IDS Number: CO5PB

Cited References in Web of Science Core Collection: 30

Times Cited in Web of Science Core Collection: 0