

MODIFICATION OF HIGHLY FLUORESCENT CdTe QUANTUM DOTS UNDER ATMOSPHERIC CONDITIONS

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In the recent years, researchers have paid more attention for constructing distinctive varieties of nanosystems such as quantum dots, nanowires, nano-rods, nanotubes and nano-films. The potential use of these materials is determined by its size, ranging from 2- 10 nm in diameter. Zeolite is a micro porous allumino-silicate mineral which serves as a molecular sieve and are currently used in many new industrial applications. Zeolite was used as a trapping agent during CdTe quantum dots synthesis with the aim of maintaining inert conditions in the synthesis media. In the current study, L-Cysteine capped CdTe QDs were synthesized in zeolite media under atmospheric conditions, maintaining the molar ratio of Cd²⁺: Te²⁻: Cysteine as 1: 0.24: 4. During synthesis, the sample was refluxed at different reaction time intervals and was visualized under ultraviolet light and was characterized using FTIR and SEM analysis. Synthesized L-cysteine capped CdTe quantum dots presented bright yellow-orange and red colors at 365 nm wavelength and the size of synthesized CdTe nano crystals are determined as 3 - 3.5 nm for 1 hour and 2 hours reaction times. FTIR analysis exhibited successful synthesis of CdTe QDs. The modified IONP-QD complex can be further developed to be used in diagnostic assays.

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