

## عنوان مقاله:

The Investigation of Optical and Morphological Properties of CdSe Quantum Dots coated on the Forsterite Nanoparticles Substrate Synthesized by Combustion Sol-Gel Method

## محل انتشار:

ششمین کنفرانس و نمایشگاه بین المللی مهندسی متالورژی و مواد (سال: 1396)

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## خلاصه مقاله:

In the synthesis of quantum dots, quantum yield is always important. Furthermore, this definition depends on factors such as particle size, concentration, and temperature. The presence of oxygen during synthesis is a problem. To prevent the formation of oxide compounds in the synthesis of quantum dots, controlled atmospheres are used. On the other hand, the application of quantum dots in labeling of bioscience is using widely in medicine and therapy of cancer cells. In the new method, CdSe quantum dots were coated on ceramic nanoparticles of forsterite, which is synthesized by the sol-gel combustion method and without presence of controlled of the atmosphere. The results obtained from the X-ray diffraction pattern represent the synthesis of the forsterite phase without impurities and segregation. After applying quantum dots on the substrate, the emission range of forsterite nanoparticles was shifted from blue to yellow. Moreover, Quantum yield of quantum dots was more than the samples, which did not be coated. Images of TEM reveal the quantum dots coated on Forrester nanoparticles in size of 5 to 7 nm. In addition, the images obtained from SEM showed agglomerated Forrester nanoparticles, in size of 200 nm. The mechanism of this synthesis is according to the creation of a high range order of quantum dots on substrate of forsterite nanoparticles.

## کلمات کلیدی:

CdSe Quantum dot, forsterite Nano particles, luminescent composite, Combustion process

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