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## Patent Search

Invention Title	A CARBON QUANTUM DOT DOPED SILICA COATED ZINC OXIDE NANOSTRUCTURE AND PREPARATION METHOD THEREOF
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### Abstract:

The present invention generally relates to a carbon quantum dot doped silica coated Zinc Oxide nanostructure and preparation method thereof. In the present invention, carbon quantum dot (CQD) doped silica coated 7 nano zinc oxide is prepared. Silica coated nano zinc oxide has broad spectrum antimicrobial property against both gram positive and negative bacteria and against a wide array of fungi as well. Interestingly CQD doping makes this nanocomposite highly fluorescent. CQD is much more biosafe than other semiconductor quantum dots like cadmium selenide, zinc selenide etc. Moreover, unlike organic fluorescent dyes like fluorescein isothiocyanate (FITC) or Rhodamine B isothiocyanate (RITC) 14 CQD does not have photobleaching property and hence their fluorescence signal can be tracked over a long period of time. This novel nanocomposite can not only be used as an antimicrobial agent, but also can be used as a carrier for drug molecules.

### Complete Specification

#### DESC:FIELD OF INVENTION:

This invention relates generally to a novel composition based on zinc oxide nanostructure, and particularly a carbon quantum dot doped silica coated zinc oxide nanostructure and preparation method thereof.

#### BACKGROUND OF THE INVENTION

Nano zinc oxide (ZnO) has a wide range of application in several sectors

7 related to human life starting from cosmetics, electronics, agriculture,

medicine etc. because of its novel optical properties, wide band gap, large exciton binding energy and antimicrobial value. Though silica coating on nano ZnO makes it more biocompatible, its antimicrobial efficacy remains unaltered. Doping of carbon quantum dot (CQD) within the nanocomposite makes it highly fluorescent, making it traceable within the cellular milieu. There are several kinds of solutions available in the prior-arts and few of

14 them have been discussed below:

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