

SYNTHESIS AND CHARACTERIZATION OF SILVER FOR BIOMEDICAL APPLICATIONS: EFFECT OF THE QUANTUM DOTS CONCENTRATION ON THE FLUORESCENCE.

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In the last decade, great research effort has been dedicated to the synthesis of Silver nanoparticles and quantum dots due to their unique optical, electrochemical, catalytic, electronic and biological properties. In this study, Silver quantum dots in a range of 2-6 nm were synthesized by a wet chemistry method using silver nitrate (AgNO_3) as the silver precursor, bovine serum albumin (BSA) as an enzyme host, polyvinylpyrrolidone receptor (PVP) as a binding agent for BSA, and sodium borohydride (NaBH_4) as a reducing agent. Colloidal dispersions with different Silver quantum dots concentrations were prepared and they were characterized by fluorescence spectroscopy. These results showed good correlations to the pixel intensity of the digital images of the colloidal solutions exposed to UV light. In addition, the synthesized Silver quantum dots were characterized by Dynamic Light Scattering, UV-VIS Spectroscopy, Scanning Electron Microscopy and Energy Dispersive X-Ray Spectroscopy. The analyzed optical behavior showed that these Silver nanoparticles could be a good candidate material for fluorescence based biosensor applications. Main results are presented in this work.

Keywords: Silver, quantum dots, fluorescence

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