

The study of Copper Doped Zinc Oxide Quantum Dots Synthesized by Sol-Gel Method

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Abstract

We have synthesized copper doped zinc oxide quantum dots by sol-gel method which zinc acetate ethanol solution was mixed with copper acetate ethanol solution at 70 °C. Later the mixed solution neutralized with sodium hydroxide ethanol solution under specific chemical reaction conditions. We found blue shift effect of zinc oxide quantum dots in photoluminescence (PL) and Ultraviolet-Visible (UV-Vis) optical absorption spectroscopy. The x-ray absorption near edge structure (XANES) spectrum was used to study the valence state for zinc and copper in quantum dots. The superconducting quantum interference device (SQUID) measurement results show zinc oxide quantum dots doped with copper are non-ferromagnetic.

Keywords - Zinc Oxide, Quantum Dot, Sol-Gel Method.