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Synthesis and characterization of Water soluble Covellite Copper Sulphide Quantum Dots

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Covellite copper monosulphide (CuS) is a representative I–VI chalcogenide semiconductor with the unique photoelectricity transformation characteristic. Due to quantum confinement effect, CuS nanoparticles exhibit optical and electrical properties as compared to the bulk materials. CuS is an indirect semiconductor with a bandgap around 1.7 eV. At high temperature CuS exhibits fast ion conduction and shows metal-like electrical conductivity and is an important semiconductor because of its excellent optical and electronic functionality. Colloidal method was used to develop CuS nanoparticles from copper acetate monohydrate and Thioacetamide in water and methanol using alanine as a stabilizing agent at pH 10 at different low temperatures. Water soluble CuS quantum dots in the form of rods and spherical shaped with an average diameter of 3-10 nm has been successfully obtained. The as-obtained CuS nanoparticles were characterized by X-ray diffractometry (XRD), scanning electron microscope (SEM), energy-dispersive X-ray spectroscopy (EDS), Infrared spectra (FT-IR), UV-visible spectroscopy (UV) and Photoluminescence (PL). Effect of temperature was investigated for the stability of nanoparticles

Level (Hons, MSc,
 PhD, other)?

Msc

Consider for a student
 award (Yes / No)?

yes

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

yes

Primary author: Ms NELWAMONDO, Swikisani (University of Johannesburg)

Co-authors: Prof. MOLOTO, Makwena (Vaal university of technology); Dr MOLOTO, Nosipho (Wits University); Prof. KRAUSE, Rui (University of Johannesburg)

Presenter: Ms NELWAMONDO, Swikisani (University of Johannesburg)

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