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Formation of AgInS₂/ZnS colloidal nanocrystals and their photoluminescence properties

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Colloidal nanocrystals of AgInS₂ were synthesized in aqueous solution using *L*-glutathione as a ligand. Wider bandgap semiconductor ZnS shell was deposited on the nanocrystal cores in order to enhance luminescence properties and stability. Thus prepared nanocrystals generally had an asymmetric multiple band emission spectrum. Variation of cation ratio [Ag⁺] to [In³⁺] led to a variation in the spectrum so that raising indium content caused an intensity increase of longer wavelength emission band. Photoluminescence and absorption spectroscopies, transmission electron microscopy, X-ray diffractometry, X-ray photoelectron spectroscopy were used for the sample characterization

Keywords: Colloidal nanocrystals, semiconductors, photoluminescence.