

The temperature dependence of photoluminescence of CuInS/ZnS QDs

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Recently, tremendous researches have been carried out on semiconductor nanocrystals (quantum dots). Among them, QDs as sensing media for biological assay and temperature have achieved great progress. In this study, temperature dependence of fluorescence intensity of CuInS/ZnS quantum dots in near infrared region was investigated. CuInS/ZnS quantum dots with the photoluminescence emission peaks at the wavelength 700, 750 and 800 nm were immobilized on the optical fiber. The surface of the optical fiber was silanized to enhance covalent bonds between quantum dots and optical fiber. The quantum dots were bonded to the surface of optical fiber and further encapsulated via sol-gel coating using 3-glycidoxypropyltrimethoxysilane (GPTMS) and 3-aminopropyl trimethoxysilane (APTMS) in ethyl alcohol. The fluorescent intensity dependence of QDs on temperature from 30–100°C has been studied.