

Characterization of CIGS nano-powders according to additive amount of Gallium

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CuInGaSe nanoparticles were synthesized at low temperature by colloidal route. Copper chloride (CuCl) in ethanol, Indium trichloride (InCl₃) and each different amount of Gallium trichloride (GaCl₃) added in n-propanol, and Selenium in ethylenediamine were mixed. All solutions were grown in 95 °C temperature. Synthesized nanoparticles were centrifuged several times as methyl alcohol to remove impurities. And it was to obtain dried pure CIGS nanoparticles in vacuum oven. From synthesized nanoparticles were dispersed in isobutyl alcohol in order to obtain for a CIGS nanoparticles and it were deposition on Mo-coated glass to air spray method. These single phase films were annealed by furnace at 500 °C temperature under Selenium environment during for 7 minute to on Rapid Thermal Process (RTP). The structural and morphological properties of CIGS thin films were investigated by systemically measurements by scanning electronic microscopy (SEM), Transmission Electron Microscope (TEM), X-Ray diffraction (XRD).