Structural and Morphological Properties of Wet Synthesized $CuInGaSe_2$ Nanoparticles

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$CuInGaSe_2$ nanoparticles were synthesized by the wet process. CuCl, $InCl_3$ and $GaCl_3$ were used as precursors which were solved in alcohol and Se was dissolved in amine and they were mixed and reacted by hotplate oil bath at temperature 90 ~ 110 ℃. As synthesized nanoparticles were washed as methyl alcohol to remove impurities and dried to obtain pure CIGS nanoparticles in vacuum oven. Synthesized CIGS nanoparticles were dispersed in alcohol to obtain a nanoparticles ink. And CIGS thin films were form by air spray method. These films were annealed by furnace at temperature 400 ℃ under Se environment for 30 min.

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