

Laser-assisted-healing of solution processed CIGS thin films

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We suggest a novel way to improve the quality of solution processed CIGS thin films by applying laser annealing process. The CIGS thin films were fabricated by a precursor solution paste with two successive heat treatments: oxidation and sulfurization. Unfortunately, the CIGS films prepared by this method revealed very porous morphology which may lead to poor solar cell performance. To heal the pores in the CIGS film laser irradiation of 355 nm wavelength was carried out with 4-6 ns pulse width and energy density of 20-40mJ/cm². We observed that the degree of porosity of the film is dramatically diminished. In addition, when the resulting films were used in solar cell devices as absorber layers the fill factor of the solar cell was observed to be enhanced, which may be related to curing of the porous morphology of the solution processed CIGS thin film. The details will be discussed in the presentation.