

ZnS top layer for enhancement of the crystallinity of CZTS absorber during the annealing - DTU Orbit (08/11/2017)

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Pulsed Laser Deposition (PLD) of thin films of $\text{Cu}_2\text{ZnSnS}_4$ (CZTS) has not yet led to solar cells with high efficiency. The reason for the relative low efficiency is discussed and a way to overcome this issue is presented. The present thin film absorbers of CZTS suffer from loss of volatile Zn during the plasma-assisted transfer with PLD. This can be compensated by adding a thin layer of ZnS (~ 80 nm) on top of the CZTS layer before the annealing. In this work the stack ordering of the two layers CZTS and ZnS is investigated, indicating that the configuration with ZnS on top of a CZTS film gives a better crystalline quality of CZTS after the annealing, as demonstrated by X-ray diffraction and Raman spectroscopy.

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