Title:	Towards cost effective absorber layer to solar cells: Optimization of physical properties to Cu doped thin CdTe films
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Abstract:	The typical absorber layer thickness to the solar cells is 3–5 μm as well as the controlled copper doping is very promising for CdTe thin films and concerned solar cell devices to achieve low resistivity and ohmic contacts as well. In this study, we report the physical properties of e-beam developed CdTe:Cu films (0.55 μm) with an impact of thermal annealing. The structural study revealed that films have preferential growth along (1 1 1) zinc blende cubic plane, and crystallinity improved with annealing. The electrical current is found to increase with voltage and decrease with annealing which revealed nearly ohmic behavior and shrinking in electrical conductivity. Films surface have deep valley and hill like topography while higher roughness is observed for 300 °C annealed films. Transmission spectra showed lower transmittance in the whole visible region and optimum band gap (1.58 eV) is estimated for 300 °C annealed films. Our study exposes that 300 °C annealed CdTe:Cu films have a preference to become a suitable candidate for absorber layer functions.
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