Title:	Exploration of CdMnTe thin film solar cells
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Abstract:	In today's world, the energy demand is growing but primary energy sources are gradually depleted and humanity will face more severe energy and environmental crisis. The efficiency of thin film solar cells has stagnated in the last few years and new viable and affordable alternative energy resources are needed. Therefore, an exploration of CdMnTe (CMT) solar cells is carried out in this work and an attempt has been made to enhance the efficiency by post-annealing treatment in vacuum at a different temperature. The structure, surface morphology and optical properties of polycrystalline CMT layers were investigated, and then CMT solar cells were produced by vapor evaporation. The device post-treated at 300 °C has maximum efficiency (3.36%) and then starts decreasing at a higher temperature. The capacitance-voltage measurements are undertaken to determine the depletion layer width and dopant density. The absolute quantum efficiency data are taken into account to validate the short circuit current and the device performance parameters as well. This study divulges that the CMT solar cells might be a potential candidate as an affordable alternative energy resource and further investigation is required to enhance the performance.
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