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**Title:** Effect of post-MgCl<sub>2</sub> activation on physical properties of e-beam evaporated CdTe films for absorber layer applications

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Cadmium telluride  
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**Abstract:** In recent years, standard chloride activation process on CdTe absorber layer is a unanimously adopted by the thin film solar cell communities to improve the performance of concerned device because this activation process passivates the grain boundaries and enhances carrier collection. The toxic nature of CdCl<sub>2</sub> emphasizes to find its alternative chlorine compound, and therefore in this communication, the impact of MgCl<sub>2</sub> activation on microstructural and opto-electrical properties of thin CdTe films is explored. The structural analysis is carried out using X-ray diffractometer which revealed the augmentation in crystallite size (upto 320 °C) and polycrystalline nature and cubic phase with preferred orientation (111). The optical absorbance is undertaken employing UV-Vis spectrophotometer, and the absorbance in the visible region is found to be good for films activated at 320 °C. The morphological micrographs of films are taken by SEM technique, and the films showed granular like dense grains with the compact surface. The film deposition and chloride treatment are verified by EDS technique while the transverse current-voltage characteristics showed ohmic behavior. Based on results, the films processed at 320 °C could be utilized as effective absorber layer to fabricate high efficiency CdTe-based solar cells.

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