



Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali (/jspui/)
/ Publications of IISER Mohali (/jspui/handle/123456789/4)
/ Research Articles (/jspui/handle/123456789/9)

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/1645>

Title: Influence of NH₄Cl treatment on physical properties of CdTe thin films for absorber layer applications

Authors: Patel, S.L. (/jspui/browse?type=author&value=Patel%2C+S.L.)
Chander, S. (/jspui/browse?type=author&value=Chander%2C+S.)
Purohit, A. (/jspui/browse?type=author&value=Purohit%2C+A.)
Kannan, M.D. (/jspui/browse?type=author&value=Kannan%2C+M.D.)
Dhaka, M.S. (/jspui/browse?type=author&value=Dhaka%2C+M.S.)

Keywords: Thin films
NH₄Cl activation treatment
Physical properties
Solar cells
Absorber layer

Issue Date: 2018

Publisher: ScienceDirect.

Citation: Journal of Physics and Chemistry of Solids, 123, pp. 216-222

Abstract: The physical properties of electron beam evaporated and chlorine-passivated CdTe thin films are investigated and the influence of NH₄Cl treatment on these properties is studied. X-ray diffraction, UV-Vis spectrophotometry, energy-dispersive spectroscopy, atomic force microscopy, and a source meter were used to investigate the physical properties, which were optimized by varying the temperature of the treatment after NH₄Cl activation. Structural analysis reveals that the crystallinity is increased at lower annealing temperature while a partial phase transition and oxidation are observed at higher annealing temperature. The absorbance is high in the visible region, and a red shift is observed at higher wavelength, while the direct bandgap is tuned by chlorine activation. The deposition of thin films and chlorine treatment were confirmed by elemental analysis. Surface topographical study reveals that the average roughness is increased with an annealing temperature up to 320 °C, while the I-V characteristics indicated ohmic nature of the contacts. The optimized results show that the NH₄Cl-treated CdTe films annealed at 320 °C may be applicable as an absorber layer in solar cells.

URI: <https://www.sciencedirect.com/science/article/pii/S0022369718301227>
(<https://www.sciencedirect.com/science/article/pii/S0022369718301227>)
<http://hdl.handle.net/123456789/1645> (<http://hdl.handle.net/123456789/1645>)


Appears in Collections: Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format
Need to add pdf.odt (/jspui/bitstream/123456789/1645/1/Need%20to%20add%20pdf.odt)		8.04 kB	OpenDocument Text

[View/Open \(/jspui/bitstream/123456789/1645/1/Need%20to%20add%20pdf.odt\)](#)

Show full item record (</jspui/handle/123456789/1645?mode=full>)

 (</jspui/handle/123456789/1645/statistics>)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.