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Title:	Impact of different annealing conditions on physical properties of ZnSe thin films for ecofriendly buffer layer applications
Authors:	Chander, S. (/jspui/browse?type=author&value=Chander%2C+S.)
Keywords:	Air-annealing Buffer-layer Microstructural and optoelectrical properties Physical vapor deposition
Issue Date:	2020
Publisher:	Elsevier Ltd
Citation:	Materials Research Bulletin, 132
Abstract:	In Cd-based and CIGS solar cells, the CdS is used as optical window to ensure maximum transmittance of the incident irradiance towards absorber-layer while Cadmium free viable alternative is required to replace toxic CdS layer. Herein, ZnSe films of thickness 200 nm were prepared by electron-beam evaporation followed by annealing in air ambient and vacuum within temperature range 100–300 °C and then subjected to various characterization tools to optimize physical properties for buffer layer applications. The structural properties demonstrate Zinc blende cubic structure with preferred reflection corresponding to (111) plane. The optical properties reveal to high transmittance in visible and nearly IR regions and direct energy band-gap is estimated within 2.53–2.65 eV range. The surface morphology indicates uniform deposition with grain-growth, EDS analysis confirms deposition of films and current-voltage relation indicates ohmic behavior. The findings warrant for applying films air annealed at 300 °C as potential buffer-layer in solar cells
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://www.sciencedirect.com/science/article/abs/pii/S002554082031463X?dgcid=rss_sd_all">https://www.sciencedirect.com/science/article/abs/pii/S002554082031463X?dgcid=rss_sd_all</a> ( <a href="https://www.sciencedirect.com/science/article/abs/pii/S002554082031463X?dgcid=rss_sd_all">https://www.sciencedirect.com/science/article/abs/pii/S002554082031463X?dgcid=rss_sd_all</a> ) <a href="http://hdl.handle.net/123456789/3205">http://hdl.handle.net/123456789/3205</a> ( <a href="http://hdl.handle.net/123456789/3205">http://hdl.handle.net/123456789/3205</a> )
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