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## Optimization of Processing and Modeling Issues for Thin-Film Solar Cell Devices

By National Renewable Energy Laboratory (NREL)

Bibliogov, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.This report describes results achieved during phase I of a four-phase subcontract to develop and understand thin-film solar cell technology associated with CuInSe<sub>2</sub> and related alloys, a-Si and its alloys, and CdTe. Modules based on all these thin films are promising candidates to meet DOE long-range efficiency, reliability, and manufacturing cost goals. The critical issues being addressed under this program are intended to provide the science and engineering basis for developing viable commercial processes and to improve module performance. The generic research issues addressed are: 1) quantitative analysis of processing steps to provide information for efficient commercial-scale equipment design and operation; 2) device characterization relating the device performance to materials properties and process conditions; 3) development of alloy materials with different bandgaps to allow improved device structures for stability and compatibility with module design; 4) development of improved window/heterojunction layers and contacts to improve device performance and reliability; and 5) evaluation of cell stability with respect to illumination, temperature, and ambient and with respect to device structure and module encapsulation.



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