



Photovoltaic Manufacturing Cost and Throughput Improvements for Thin -Film Cigs- Based Modules: Phase I Technical Report

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 *****.The primary objectives of the Global Solar Energy (GSE) Photovoltaic Manufacturing Technology (PVMaT) subcontract are directed toward reducing cost and expanding the production rate of thin-film CuInGaSe₂ (CIGS)-based PV modules on flexible substrates. Improvements will be implemented in monolithic integration, CIGS deposition, contact deposition, and in-situ CIGS control and monitoring. In Phase 1, GSE has successfully attacked many of the highest risk aspects of each task. All-laser, selective scribing processes for CIGS have been developed, and many end-of-contract goals for scribing speed have been exceeded in the first year. High-speed ink-jet deposition of insulating material in the scribes now appears to be a viable technique, again exceeding some end-of-contract goals in the first year. Absorber deposition of CIGS was reduced corresponding to throughput speeds of up to 24-in./min, also exceeding an end-of-contract goal. Alternate back-contact materials have been identified that show potential as candidates for replacement of higher-cost molybdenum, and a novel, real-time monitoring technique (parallel-detector spectroscopic ellipsometry) has shown remarkable sensitivity to relevant properties of the CIGS absorber layer for use as a diagnostic tool. Currently, one...

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