



Research on High-Bandgap Materials and Amorphous Silicon-Based Solar Cells: Final Technical Report

National Renewable Energy Laboratory (NREL)



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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 work performed by Syracuse University under this subcontract. Researchers developed a technique based on electroabsorption measurements for obtaining quantitative estimates of the built-in potential V_{bi} in a-Si: H-based heterostructure solar cells incorporating microcrystalline or a-SiC: H p layers. Using this new electroabsorption technique, researchers confirmed previous estimates of V_{bi} approx. equal to 1.0 V in a-Si: H solar cells with conventional intrinsic layers and either microcrystalline or a-SiC: H p layers. Researchers also explored the recent claim that light-soaking of a-Si: H substantially changes the polarized electroabsorption associated with interband optical transitions (and hence, not defect transitions). Researchers confirmed measurements of improved (5X) hole drift mobilities in some specially prepared a-Si: H samples. Disturbingly, solar cells made with such materials did not show improved efficiencies. Researchers significantly clarified the relationship of ambipolar diffusion-length measurements to hole drift mobilities in a-Si: H, and have shown that the photocapacitance measurements can be interpreted in terms of hole drift mobilities in amorphous silicon. They also completed a survey of thin BP: H and BPC: H films prepared by plasma...



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