



High Efficiency Ultra Thin Cadmium Telluride (CdTe) Solar Cells

By Nowshad Amin

LAP Lambert Academic Publishing Jan 2015, 2015. Taschenbuch. Book Condition: Neu. 220x150x9 mm. This item is printed on demand - Print on Demand Neuware - Thin film cadmium telluride absorbers with cadmium sulphide hetero-junction partner are promising candidates for high efficiency low cost solutions of solar energy harvesting devices. These devices have band gaps well-suited for effective absorption of sunlight. Most importantly, the materials used in these devices can be deposited in a variety of industry-friendly ways, so that the cost associated with manufacturing is generally lower than other available technologies. Although poly-crystalline CdS has been found to be the best suited heterojunction partner for CdTe solar cell, the conventional polycrystalline CdS/CdTe cell has few issues that limit device performance. In order to overcome these problems, this study proposes the introduction of poly-CdS to amorphous oxygenated CdS (a-CdS:O) as window layer. The a-CdS:O window material has higher optical band gap (2.5-3.1 eV), better lattice match with CdTe absorber materials and reduced inter-diffusion tendency of CdS and CdTe layers. This book systematically demonstrates the conversion process of poly CdS to a-CdS:O and develops a strategy for the fabrication of suitable a-CdS:O layer to be applied in CdTe solar cells. 148 pp...



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