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Where can we make an efficiency breakthrough with CdTe solar cells? KUO-JUI HSIAO, Colorado State University — CdTe is a potential candidate for the material of high efficiency thin film solar cells due to its high absorption and theoretical optimal bandgap. However the record efficiency of CdTe solar cells is only about 55% of its theoretical maximum efficiency, primarily because of a voltage well below that expected for its bandgap. A CdTe solar cell with superstrate configuration Glass/TCO/CdS/CdTe/CdZnTe/Metal is proposed. In this configuration, CdZnTe electron reflector, which should improve open circuit voltage, will be added to the standard structure. This proposed configuration can be achieved in the continuous in-line deposition system at Colorado State University. Since the vacuum will not be broken, less interfacial defects are expected.

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