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Optimization of open circuit voltage in parallel solar cell tandems¹ ALEXANDER KUZNETSOV, ANVAR ZAKHIDOV, Nanotech Institute, University of Texas at Dallas — Significant improvement of the solar cell efficiency is achieved by combining solar cells into tandems. Matching of the open circuit voltages (V_{oc}) of individual cells is required in order to maximize the efficiency of the parallel tandem. However practically it is hard to achieve because usually individual cells of the tandem absorb light at different wavelengths and produce very different V_{oc} . Mismatch of open circuit voltages results in deteriorated performance of a parallel tandem. In this work we use circuit analysis to determine parameters of parallel tandem's individual cells that guarantee its most efficient operation. The results of our calculations can be used for optimization of individual solar cells when designing a parallel tandem.

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