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# Investigation of InGaN/Si double junction tandem solar cells

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**Abstract:** In this work, the solar power conversion efficiency of InGaN/Si double junction tandem solar cells was investigated under 1-sun AM1.5 illumination, using realistic material parameters. With this intention, the current-voltage curves are calculated for different front recombination velocities and the influence of the bottom cell thickness on efficiency has been studied. The results show that a front recombination velocity value of 1e3cm/s is most advantageous and the use of relatively thick bottom cell is necessary to obtain conversion efficiency greater than 27%, at 300°k cell temperature. This efficiency will decrease as the operating temperature increase.

**Keywords :** Photovoltaic, Efficiency, Carrier Lifetimes, Recombination Velocity, Temperature