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Absorption degradation of Poly crystalline silicon solar cell due to hot spot formation

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Abstract content
   (Max 300 words)
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This paper focuses on the degradation of solar cell absorbance due to localized heat. A decrease in optical absorbance represents a huge problem because of long-term solar cell degradation, decrease in absorption coefficient and a reduction in solar cell conversion efficiency. This decreases the photo-generating current hence reduces the effective efficiency of the solar device. This research investigates the reduction in Poly-Si cell absorption and correlates this with hot spot formation. Infrared Thermography was used for mapping of the cell temperature profile, while IR flying meter software was used to identify the hot spot centre. Fourier Transformation Infrared Spectroscopy (FTIR) was used for absorption characterization. The study was undertaken through indoor hot spot assessment method by subjecting the device to a reverse biased condition. This method was chosen so as to test the cell susceptibility to hot spot formation. The results show a direct correlation between localized heat and absorption degradation, the final paper will present the detailed results.

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MSc

Main supervisor (name and email)
and his / her institution

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