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Electrical and mechanical degradation analysis of degraded single junction amorphous silicon solar modules

The electrical and mechanical degradation analysis of degraded single junction amorphous silicon solar modules have been studied. This study was motivated by his quest to understand the fundamental principles behind the degradation and the low stability that is usually experienced by amorphous silicon solar (a-Si:H) modules. The electrical performance parameters of a-Si:H modules were investigated under both outdoor and indoor conditions. The study also involved the characterisation of defects and mechanical degradation analysis of the a-Si:H modules. Indoor characterisation was used to investigate the effect of degradation on the intrinsic properties of the a-Si:H modules using Kelvin Probe Microscope at nano-scale level to measure the surface contact potential. The study established that the degradation of the mechanical properties of a-Si:H modules is a major contributor to the electrical degradation of the modules as oppose to the other way around. The study recommends an improvement on the adhesive force between different layers of a-Si:H modules in order to reduce the degradation and improve the stability of these modules.

Apply to be
 considered for a student
   award (Yes / No)?

No

Level for award
 (Hons, MSc,
   PhD, N/A)?

N/A

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