

Surface passivation and light trapping in thin CIGS solar cells

Publieke samenvatting / Public summary

Aanleiding

CIGS solar cells have seen a remarkable increase of efficiency over the last years, but there is still significant gain possible. In particular the Voc of the cells could be improved by more than 50 mV if proper surface passivation could be applied. The proposed concept would improve relative cell efficiency by 10%.

Doelstelling

The aim of the project is to introduce rear and front side surface passivation of CIGS and to combine this with rear side texturization, with two main purposes: to increase the efficiency; and to allow thinner absorber layers.

Korte omschrijving

Outline of project activities: 1 Implementation of a Al₂O₃ layer, made by ALD, to create a surface passivating layer between the CIGS and the rear contact, and between the CIGS and the buffer layer. 2 Creation of local openings in the Al₂O₃ layer, to create electrical connection between the CIGS layer and the rear contact layer and buffer layer. We will investigate both the application of nano-imprint lithography and laser ablation to create these openings. 3 Fabrication of CIGS solar cells, with thinner absorber layers, and with rear and front side passivation by Al₂O₃.

Resultaat

The project should result in thinner CIGS solar cells (thickness < 1.5 μ m), with an increased efficiency

Projectinformatie / Project information

Projectnummer / Project number
TEID215031

Subsidiebedrag / Grant amount
€ 737.375,00

Algemene informatie / General information

Penvoerder / Secretariat
TNO

Publicaties en materialen / Publications and attachments

- 09.07.2019

Eindrapport TEID215031

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due to rear and front side passivation.

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