

Dutch Equipment Solutions for Improved Renewable Energy

Publieke samenvatting / Public summary

Aanleiding

At present, CIGS (Copper Indium Gallium Selenide/Sulfide) is the only type of thin film PV material that can compete with wafer based silicon in terms of efficiency. However, in order to utilize its full potential, performance has to be further improved at reduced production cost.

Doelstelling

The goal of DESIRE is to combine two innovative, high rate, low cost technologies to produce more efficient CIGS solar cells, while eliminating use of cadmium and reducing use of indium.

Korte omschrijving

In this project the use in CIGS cells of scarce (indium) and environmentally unfriendly (cadmium) materials is addressed by replacing the indium based transparent conductor by zinc oxide and the cadmium based buffer layer by zinc sulfide. Quality is improved by producing the n-type layers by Atomic Layer Deposition. These improvements have already been shown by several parties on research scale, but were up to now not economically feasible. Furthermore a recently developed technique (spatial ALD) will for the first time be demonstrated for large area deposition of atom layer by atom layer deposition at 10-100 times faster rates than conventional ALD. Also, the zinc oxide transparent conductor which is currently produced by a highly energetic process (sputtering) which tends to degrade the ALD layers and interfaces, is replaced by a more gentle deposition process (Expanding

Projectinformatie / Project information

Projectnummer / Project number
TEZ0213003

Subsidiebedrag / Grant amount
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Algemene informatie / General information

Penvoerder / Secretariat
Meyer Burger (Netherlands) B.V.

Publicaties en materialen / Publications and attachments

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Thermal Plasma), which produces high quality layers at higher rates.

Resultaat

The project results in a improved performance of CIGS solar cells with at least 5% by improving optical transparency of the top (n-type buffer- and intrinsic) layers and electrode material, such that more light can reach the CIGS absorber layer and PV efficiency will be improved.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

Voor meer informatie over de Topsector Energie, ga naar www.topsectorenergie.nl.

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar www.rvo.nl/tse.