

# Flexible Tandem PSC-CIGS

## Publieke samenvatting / Public summary

### Aanleiding

The price of an installed photovoltaic (PV) system is nowadays mostly determined by the non-module and installation costs, not by the cost of PV module manufacturing. The development of low cost multi-junction (MJ) devices is a promising approach to reduce these two contributions and consequently, the levelized cost of energy (LCOE).

### Doelstelling

The main target is to develop and demonstrate highly efficient four-terminal (4T) hybrid tandem architectures based on perovskite (PSC) and CIGS thin film technologies. Both of them can be fabricated on lightweight flexible foils by means of a continuous roll to roll (R2R) manufacturing line, further reducing fabrication and installation costs.

### Korte omschrijving

The development and optimization of the semitransparent perovskite solar cells in terms of functional layers, band gap absorbers, and manufacturing processes (wet deposition and drying step of the perovskite) will be carried out by TNO. The deposition techniques for the n-type metal oxide transport layers will be developed by TNO and Solaytec. The work on the CIGS sub cell will be carried out by TNO and MiaSolé, and will mainly focus on the reduction parasitic losses which are limiting the performance of the CIGS cells when used as bottom solar cell in 4T architecture. Alongside the work on the two subcells, optical modeling will be carried out to provide the required input for device design with the aim to optimize the performance.

#### Projectinformatie / Project information

##### Projectnummer / Project number

TKITOE1821103

##### Subsidiebedrag / Grant amount

€ 164.230,00

#### Algemene informatie / General information

##### Penvoerder / Secretariat

TNO

#### Publicaties en materialen / Publications and attachments

- 18.03.2024

##### Eindrapportage Flexible Tandem

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## Resultaat

The work within this project will enable us to outperform the current world record efficiency of 4T PSC-CIGS architectures (from 21.5% to 24% on flexible foils) on small areas ( <0.3 cm<sup>2</sup>) and the solution developed here will tested fabricating the first prototypes on larger areas (at least 4 cm<sup>2</sup>).

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](http://www.topsectorenergie.nl).

Voor meer informatie over de TSE / Energie-Innovatie regelingen die RVO aanbiedt, ga naar [www.rvo.nl/tse](http://www.rvo.nl/tse).