HORIZON-CL5-2023-D3-02-12
Large area perovskite solar cells and modules

LUMINOSITY

Large area uniform industry compatible perovskite solar cell technology

Starting date of the project: 01/06/2024
Duration: 48 months

= Deliverable D2.3 =

Verification of large area operational uniformity

Abstract

Deliverable D2.3 presents the verification of large-area operational uniformity of perovskite solar cells developed within LUMINOSITY using scalable slot-die coating. The work assesses the reproducibility of device performance across large-area substrates through optical, morphological and electrical characterisation, considering key photovoltaic parameters including open-circuit voltage, short-circuit current density, fill factor and power conversion efficiency.

The results demonstrate high-efficiency perovskite solar cells processed by scalable slot-die coating over areas up to 100 × 100 mm^2. The most optimised process achieved peak efficiencies above 22%, with a PCE distribution below 5% relative standard deviation, meeting the key performance targets of the deliverable.

The work also demonstrates the transfer of scalable processing approaches from rigid to flexible substrates. Further development will focus on flexible substrates and scalable solvent systems supporting the transition toward roll-to-roll processing in later stages of the project.

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101147653.