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 D3.3 =

Integration into upscalable stack

Abstract

Deliverable D3.3 presents the integration of a complete perovskite solar cell stack using scalable and industrially compatible deposition techniques. The work covers the development and integration of key functional layers, including FTO, NiOx, electron transport and buffer layers, and transparent conductive oxides, with a focus on processes suitable for large-area implementation.

A complete solar cell stack was successfully demonstrated on flexible Al/FTO substrates using scalable sheet-to-sheet processes. Small-area devices achieved efficiencies close to 14.8% on flexible substrates, compared with around 15% on reference glass/ITO, demonstrating comparable performance when transitioning from rigid to flexible substrates.

Further progress was achieved in the development of individual stack components, including sputtered NiOx, scalable electron transport and buffer layers, and indium-free transparent conductive oxides. These results provide a basis for the continued transition toward large-area, scalable perovskite solar cell manufacturing within LUMINOSITY.

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