

Ultra-fast Curing of Perovskite Solar Cells: Accelerating Scale-Up



Widely hailed as the next big thing in solar technology, third generation perovskite solar cells are flexible and lightweight and can be printed onto glass or metal, making them a solution for application in building integrated photovoltaics (BIPV).

They also work well in low light conditions, such as we have in the UK. One of the main benefits of this technology will be low cost energy generation targeting a 50% reduction in current solar costs.

However, for perovskite cells to become commercially viable they need to be quick and cheap to manufacture at scale. One of the biggest manufacturing bottlenecks is annealing (heating and cooling) of the active perovskite layer, which takes up to 90 minutes in an oven at 100°C.

Over the last four years SPECIFIC has pioneered the use of near-infrared for a range of drying and curing processes in solar cell manufacture. This has reduced the perovskite annealing step from 90 minutes to under 3 seconds, with little impact on performance.

Led by:



Swansea University
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Funders:

EPSRC

Engineering and Physical Sciences
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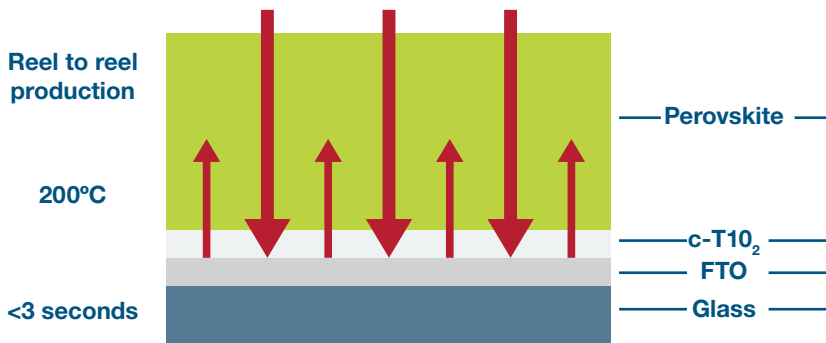


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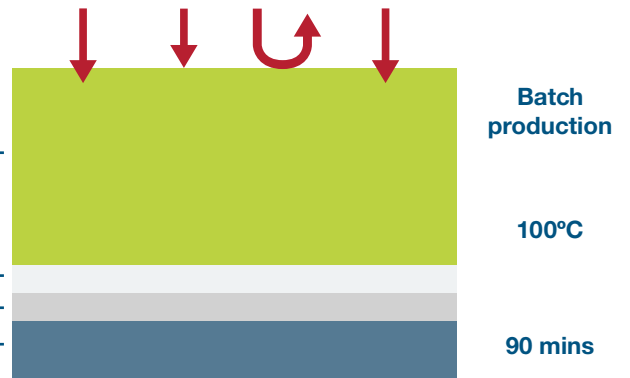
How it Works:

Near-infrared heating



Rapid heating of Fluorine doped Tin Oxide (FTO) layer drives solvent out from substrate

Hot air heating



Gradual heating from perovskite surface



Commercial Impacts:


**REEL TO REEL
PRODUCTION
CAPABILITY**


**ANNEALING FROM
90 MINUTES TO
3 SECONDS**


**SIGNIFICANTLY
REDUCED ENERGY
CONSUMPTION
DURING
MANUFACTURING**


**SIGNIFICANTLY
REDUCED
MANUFACTURING COSTS**

**SUPPORTS RAPID ENTRY
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