

Advances in stable and flexible perovskite solar cells

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ABSTRACT

Roll-to-roll (R2R) production is an innovative approach and is fast becoming a very popular industrial method for high throughput and mass production of solar cells. Replacement of costly indium tin oxide (ITO), which conventionally has served as the transparent electrode would be a great approach for roll to roll production of flexible cost effective solar cells. Indium tin oxide (ITO) and fluorine-doped tin oxide (FTO) are brittle and ultimately limit the device flexibility. Perovskite solar cells (PSCs) have been the centre of photovoltaic research community during the recent years owing to its exceptional performance and economical prices. The best reported PSCs fabricated by employing mesoporous TiO₂ layers require elevated temperatures in the range of 400–500 °C which limits its applications to solely glass substrates. In such a scenario developing flexible PSCs technology can be considered a suitable and exciting arena from the application point of view, them being flexible, lightweight, portable, and easy to integrate over both small, large and curved surfaces.

KEYWORDS

Renewable energy; Lightweight device; Portable device; Flexible perovskite solar cell; Fibre shaped solar cells

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