# Low Temperature Solution Processed Perovskite Solar Cells

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2/4

# **Low Temperature Solution Processed Perovskite**

SEM images of perovskite film before and after coating PCBM layer, XRD of CH 3 NH 3 PbI 3-x Cl x and CH 3 NH 3 PbI 3, absorption of CH 3 NH 3 PbI 3-x Cl x with and without PCBM layer, J-V curve of the low-temperature processed perovskite solar cells with glass/ITO/PEDOT:PSS/CH 3 NH 3 PbI 3-x Cl x /ZnO/Al, and the relationship between power conversion efficiency with light intensity.

# Low-Temperature Solution-Processed Perovskite Solar Cells ...

The modules delivered a maximum PCE of 13.1% obtained on an active area of 13.8 cm2 and of 11.9% on an aperture area of 15.2 cm2 representing state of art performance for fully low temperature solution processed planar perovskite solar modules.

# Low temperature, solution-processed perovskite solar cells ...

The use of organic hole transporting layers (HTLs) in organolead halide perovskite solar cells (PSCs) often limits the air and thermal stability of the devices. In this work, we developed a low-temperature solution process that enables the fabrication of nickel oxide (NiOx) based HTLs on top of perovskite ac

# Low-temperature solution-processed NiOx films for air ...

the low-temperature processed perovskite solar cells originate mainly due to charge recombination at imperfect interfaces and structural or chemical defects in perovskite films. In this article, we explore the possibility of fabricating perovskite-based solar cells via a low-temperature (<120 C) solution-processing approach. We obtain 11.5% PCE

# Low-Temperature Solution-Processed Perovskite Solar Cells ...

Low-Temperature Solution-Processed Perovskite Solar Cells with High Efficiency and Flexibility. Therefore, the smaller grains in the 2% and 4% films had more grain boundaries (more grain package) to provide PL quenching sites, but the 2% and 4% samples exhibited better PL intensities.

#### Low-Temperature Solution-Processed Perovskite Solar Cells ...

Abstract. Herein, the development of inverted PVSCs is reported based on low temperature solution-processed CuCrO 2 nanocrystals as a hole-transporting layer (HTL), to replace the extensively studied NiO x counterpart due to its suitable electronic structure and charge carrier transporting properties.

# Low-Temperature Solution-Processed CuCrO2 Hole ...

Low-temperature solution-processed materials that show optical gain and can be embedded into a wide range of cavity resonators are attractive for the realization of on-chip coherent light sources.

# Low-temperature solution-processed wavelength-tunable ...

Low-temperature solution-processed wavelength-tunable perovskite for lasing. Their ultra-stable amplified spontaneous emission at strikingly low thresholds stems from their large absorption coefficients, ultralow bulk defect densities and slow Auger recombination. Straightforward visible spectral tunability (390-790 nm) is demonstrated.

#### Low-temperature solution-processed wavelength-tunable ...

Meanwhile, the low-temperature, solution-processed SnO 2 electron transport layer (ETL) was used to replace the TiO 2 ETL to simplify the device fabrication process. The X-ray diffraction (XRD) pattern of perovskite CsPbI 2 Br deposited on SnO 2 ETL was shown in Fig. 1 a.

#### Interface engineering of low temperature processed all ...

A ZnO compact layer formed by electrodeposition and ZnO nanorods grown by chemical bath deposition (CBD) allow the processing of low-temperature, solution based and flexible solid state perovskite CH 3 NH 3 PbI 3 solar cells. Conversion efficiencies of 8.90% were achieved on rigid substrates while the flexible ones yielded 2.62%.

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4/4