

Do fluoride and fluorinated organic additives affect photovoltaic performance?

In this research update, we review the chemical, structural, and functional effects of fluoride and fluorinated organic additives in halide perovskites, especially on stability and photovoltaic performance. We detail the evidence that, when incorporated as its anion, fluoride is typically localized to perovskite surfaces and grain boundaries.

Can fluorine be used as a photovoltaic absorber?

In this Research Update, the authors review the potential for fluorine, when incorporated at interfaces, to address fundamental materials challenges to the stability and photophysical properties of halide perovskites, a burgeoning class of photovoltaic absorber materials.

Do fluorine-containing additives improve PSC performance?

Among these, fluorine-containing additives have garnered significant interest because of their unique hydrophobic properties, effective defect passivation, and regulation capability on the crystallization process. However, a targeted structural approach to design such additives is necessary to further enhance the performance of PSCs.

Can crystalline silicon based photovoltaic modules be coated?

On the other hand, in standard crystalline silicon based photovoltaic modules it is also usual to use coatings deposited on the cover glass, but with other purposes beyond protection, as enhancement of optical properties or soiling performance [25].

Does coating deposition affect photovoltaic performance?

Photovoltaic and aging performance were examined through the short-circuit current density values and colour change of the composite. Decrease in the initial photovoltaic performance of the modules was caused by the coating deposition.

Does fluorinated coating increase short-circuit photocurrent density?

The short-circuit photocurrent density ( $J_{sc}$ ) increased from 19.20 to 20.31 mA cm<sup>-2</sup> when 2 wt % of V570 was introduced in the fluorinated coating, thus leading to a 6% increase in  $J_{sc}$  (and also in PCE).

The impact of induced noncovalent sulfur-fluorine interaction position on the electronic structures, ordering structures, and photovoltaic performance is systematically studied.

An invention with the potential to enhance the conductivity of a kind of glass coating used on objects such as solar cells, touch screens and energy-efficient windows has been made by ...

The F coating was fabricated by a sputtering process using perfluoroalkoxy alkane (PFA) targets with the

lowest refractive index (1.34) among polymers. The F coating forms bonds at high F contents, such as C F<sub>3</sub> and C F<sub>2</sub>, which ...

Simple synthesis of weather-resistant and self-cleaning anti-reflective coating for enhancing photovoltaic conversion efficiency ... The coating process was completed with three 10-min ...

In the present work, pure TiO<sub>2</sub> and Fluorine doped TiO<sub>2</sub> (F-TiO<sub>2</sub>) thin films were prepared and their effect on the photovoltaic response of perovskite solar cells was investigated. Six ...

DOI: 10.1016/j.apsusc.2023.159193 Corpus ID: 266565767; Facile one-step spraying preparation of fluorine-free transparent superhydrophobic composite coatings with tunable adhesion for ...

(3) Water surface type bracket. With the continuous promotion of distributed photovoltaic power generation projects, making full use of the sea, lakes, rivers and other water surface resources to install distributed ...

We study the photovoltaic properties of the Pt/BiFeO<sub>3</sub> (BFO) thin film/fluorine-doped tin oxide capacitor and obtain the open circuit voltage ( $V_{oc}$ ) of 0.44 V and short circuit ...

Vapor-phase fluoride exposure enables scalable stabilization of perovskite solar modules. Zhao et al. alleviated evaporation-driven concentration fluctuations during solution coating of stabilizing layers by exposing ...

To investigate the effect of the number of fluorine atoms on  $\eta_r$ , 45 devices based on three copolymers were prepared and  $\eta_r$  was calculated using eqn S1. + Fig. 2 showed that the  $\eta_r$  are 3.4 for PBDT-2F-BTs, 4.3 for ...

In orthodontics, it is important to reduce the static friction between brackets and wires in order to enable easy tooth movement. The goal of the present study was to deposit ...

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