

Can oxalic acid passivate surface defects of perovskite films?

Surface defects of perovskite films are effectively passivated using oxalic acid, which has two C=O groups and can passivate the Pb<sup>2+</sup>-related defects. The oxalic acid passivated perovskite solar cell exhibits a champion PCE of 21.67 % from the reverse measurement and PCE of 21.54 % from the forward measurement.

Which oxalic acid passivated perovskite solar cell exhibits a champion PCE?

The oxalic acid passivated perovskite solar cell exhibits a champion PCE of 21.67 % from the reverse measurement and PCE of 21.54 % from the forward measurement. Solution processed perovskite films usually exhibit numerous defect states on the surfaces of the films.

Can oxalic acid improve photovoltaic performance?

According to the above analysis, it can be concluded that the modification of oxalic acid can effectively improve the interfacial contact, reduce energy barrier and inhibit charge recombination, which will contribute to an improved photovoltaic performance. 3.3. Photovoltaic performance

Does oxalic acid improve photon utilization efficiency?

As shown in Fig. 8c, the modification of oxalic acid is able to improve the photon utilization efficiency of the device, especially in the wavelength range from 450 nm to 800 nm. It demonstrates that the incorporation of oxalic acid is an effective CIL modification approach to achieve high-efficient OSCs.

Can organic cation be used for planar solar cells?

Adv. Funct. Mater. 2019; 29: 1806482 Tailoring organic cation of 2D air-stable organometal halide perovskites for highly efficient planar solar cells. Efficient and stable CsPbI<sub>3</sub> solar cells via regulating lattice distortion with surface organic terminal groups.

Can PTAA be used as hole transport materials in perovskite solar cells?

Adv. Energy and Sustain. Res. 2022; 3: 2200045 Efficient, stable and scalable perovskite solar cells using poly (3-hexylthiophene). PTAA as efficient hole transport materials in perovskite solar cells: a review. Dopant-free polymeric hole transport materials for efficient CsPbI<sub>2</sub>Br perovskite cells with a fill factor exceeding 84%. J. Mater. Chem.

The role of oxalic acid treatment of TiO<sub>2</sub> surface can be summarized as follows:  $\sin[2kR_j + d_j(k)]$  where  $f(k)$  is the amplitude function for  $j$ th shell,  $d(k)$  the phase shift,  $l$  the electron mean free path, and  $N_j$  the number of neighboring atoms ...

oxalic acid (OA) with two bifacial carboxylic acid groups was employed as an additive into the perovskite precursor solution, which facilitated modulating the crystallization process leading to ...

XPS, UV-Vis, FTIR and EXAFS Studies to Investigate the Binding Mechanism of N719 dye onto Oxalic Acid Treated TiO<sub>2</sub> and Its Implication on Photovoltaic Properties Jaspreet Singh1, ...

capability to convert solar energy into solar power. There are various solar power techniques, such as dye- ... dye-oxalic acid-Tween 80-oxalic acid,<sup>25</sup> and so forth, have been used in the ...

To confirm the effects of oxalic acid, saline-alkali stress experiments were conducted on alfalfa using different oxalic acid concentrations. We aimed to evaluate whether ...

Draganic et al. [18] have shown that, for the reaction between the radical OH and three forms of oxalic acid, the reactivity decreases in the order of HC<sub>2</sub>O<sub>4</sub> · > C<sub>2</sub>O<sub>4</sub><sup>2-</sup> ...

The prices of PV panels have dropped by a factor of 10 within a decade. In general, the PV setup consists of several parts including the cells, electrical and mechanical ...

Oxaquim is finalizing the installation of photovoltaic solar panels in an area of 25,000 square meters at its production plant in Alcañiz. The project, valued at 1.5 million euros, ...

While numerous studies have explored the mineralogical characteristics and purification techniques of high-purity quartz (HPQ), discussions on impurity control during various purification processes and their ...

Green oxalic acid: Oxalic acid is a potential new sustainable platform chemical in a value tree to produce ingredients for the cosmetics, polymer, and pharmaceutical industry fits in a circular future as it can be ...

Download scientific diagram | Top panel: infrared extinction spectra of oxalic acid dihydrate particles generated during Exp. 2 (green line, corresponding to spectrum d shown in Fig. 4) and Exp. 3 ...

Organic molecules have been employed in electron and hole extraction layers, as well as in bulk and surface passivation layers. In this perspective, we provide an overview of the opportunities and potential ...

