

Can polyethylene terephthalate be used as a substrate for photovoltaic devices?

Polyethylene terephthalate (PET) is a low-cost flexible film that can be used as a substrate for photovoltaic devices. Lamination of large flexible PET films using adhesives poses the common problems of non-uniformity in adhesive thickness and high interfacial thickness.

Can coatings improve the efficiency of solar photovoltaic cells?

These insights are instrumental in discerning the coatings' potential for augmenting the efficiency and longevity of solar photovoltaic cells, advancing the field of sustainable energy.

What factors affect the power difference between coated and uncoated PV panels?

It was found that conditions such as cloudiness, rainfall, and muddy stain significantly influenced the power difference (DP) between the coated and uncoated PV panels. The increase in DP was due to the improved dust removal from the super-hydrophilic surface of the coated panels.

How is surface treatment performed on pre-coated PET substrates?

Surface treatment is conducted on the pre-coated PET substrates to reduce the lamination temperature to below that of the glass transition temperature T_g of PET. Surface treatment is carried out using epoxy-based silane coupling agent (termed as silane for future reference).

How do environmental parameters affect solar photovoltaic (PV) performance?

The environmental parameters, including Dry Bulb Temperature (DBT), Relative Humidity (RH), and Direct Normal Irradiance (DNI), play a pivotal role in shaping the performance outcomes of solar photovoltaic (PV) cells when coated with various biodegradable polymer materials.

What is the temperature range of thermal decomposition of PVDF?

Thermal decomposition of PET occurs in the temperature range 350-500 °C. However, the thermal decomposition of PVDF also progresses within this temperature range and generates toxic hydrogen fluoride gas in the process, making it challenging to recover pure PVDF by thermal decomposition [24,25].

One of the technical challenges with the recovery of valuable materials from end-of-life (EOL) photovoltaic (PV) modules for recycling is the liberation and separation of the ...

This review addresses the growing need for the efficient recycling of crystalline silicon photovoltaic modules (PVMs), in the context of global solar energy adoption and the impending surge in end-of-life (EoL) ...

Researchers in China are proposing a new technique to recover polyethylene glycol terephthalate (PET) and ethylene-vinyl acetate (EVA) in solar panels at the end of their lifecycle. The two ...

To gain insights into the composition and structure of PET-based BSs, we collected BS cross-sections from 84 PV modules differing by type, manufacturer, age, and history (new, shelf-stored, and field-aged modules).

In the past few decades, the solar energy market has increased significantly, with an increasing number of photovoltaic (PV) modules being deployed around the world each year. Some ...

Solar energy is widely used in photovoltaic power generation as a kind of clean energy. However, the liquid film, frosting, and icing on the photovoltaic module seriously limit the efficiency of ...

We leverage PV market reports, interviews with PV researchers and other industry stakeholders, and peer-reviewed literature to narrow the multitude of possible changes into a manageable set of 11 ...

It is worth noting that fixed PV panels are exempt from this regulation as it only applies to portable PV panels. The evaluated lead concentration is 344 ± 4 mg/kg and 22,400 ...

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