

Surface treatment of photovoltaic coating substrate

Can antireflective coatings improve photovoltaic performance?

One promising approach involves the application of antireflective coatings to the surface of the photovoltaic glass to improve its transmittance. However, balancing mechanical durability, self-cleaning characteristics, and optical performance for photovoltaic applications remains challenging.

Which surface treatment is suitable for preparing photovoltaic self-cleaning surfaces?

CVD-based surface treatment is suitable for preparing photovoltaic self-cleaning surfaces. These methods prepare self-cleaning surfaces by reacting gaseous substances with hot surfaces and depositing them on the surface. They are efficient but difficult to control accurately.

Which method is suitable for self-cleaning coating of photovoltaic modules?

The preparation methods suitable for self-cleaning coating of photovoltaic modules include LBL, CVD, sol-gel method, and plasma-etching technology. LBL, CVD, and sol-gel technologies are all CVD-based surface treatment technologies, which have difficulty in precision control. Sol-gel method and LBL are both economical.

Which method is used for self-cleaning of photovoltaic glass cover?

Because of its compatibility with glass, such methods are particularly conducive to the formation of transparent and super-hydrophobic films on the glass surface (Yan et al. 2011). Therefore, the sol-gel method is often used for self-cleaning of photovoltaic glass cover.

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).

Why do photovoltaic panels need a self-cleaning coating?

The self-cleaning coating has attracted extensive attention in the photovoltaic industry and the scientific community because of its unique mechanism and high adaptability. Therefore, an efficient and stable self-cleaning coating is necessary to protect the cover glass on the photovoltaic panel. There are many self-cleaning phenomena in nature.

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