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Polycrystalline silicon for solar glass

Overview

Can polycrystalline silicon thin-film solar cells be used on glass?

A research project is under way at The University of New South Wales aiming at the realisation of a novel type of polycrystalline silicon thin-film solar cell on glass.

What are the advantages of polycrystalline silicon compared to wafer-based solar cells?

Fabricated as thin layers, polycrystalline silicon also features all advantages of thin-film technologies, namely low costs due to low material wastage with up to factor 100 less material compared to wafer-based solar cells, and the technically feasible monolithic fabrication of large area devices.

How effective are crystalline silicon thin-film solar cells?

With an appropriate light trapping concept crystalline silicon thin-film solar cells can principally reach single-junction efficiencies of more than 17% close to that of silicon wafer-based solar cells, as calculated by Brendel in 1999 .

Can large-grained poly-Si be used for thin-film solar cells?

On the one hand we have investigated the preparation of large-grained poly-Si for thin-film solar cells using the ‘seed layer concept’. Although this approach did not lead to improved efficiencies so far it is a very promising option for the future development of poly-Si thin-film solar cells on glass.

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[Polycrystalline silicon thin-film solar cells on glass by ...]

Nov 16, 2004 · Polycrystalline silicon thin-film solar cells on glass by solid phase crystallization of in-situ doped evaporated a-Si. Proceedings of the 19th European Photovoltaic Solar Energy ...

[Polycrystalline silicon thin-film solar cells: Status and ...]

Dec 1, 2013 · The present article gives a summary of recent technological and scientific developments in the field of polycrystalline silicon (poly-Si) thin-film solar cells on foreign ...

[Continuous Polycrystalline Silicon Layers on Glass grown ...]

Polycrystalline silicon on glass for photovoltaic applications is grown at low temperatures in a two-step process. In the first step, nanocrystalline Si (nc-Si) films are formed by direct deposition ...

[Polycrystalline silicon thin-film solar cells on glass]

Jun 1, 2009 · Poly-Si thin-film solar cells on glass feature the potential to reach single-junction efficiencies of 15% or even higher at low costs. In this paper i...

[Polycrystalline silicon on glass for thin-film solar cel]

Aug 28, 2017 · Abstract Although most solar cell modules to date have been based on crystalline or polycrystalline wafers, these may be too material intensive and hence always too expen ...

[Novel Approach for Thin Film Polycrystalline Silicon on ...]

Mar 6, 2023 · INTRODUCTION Recently, thin polycrystalline silicon (poly-Si) films on cost-effective substrates (e.g., glass) are emerging as a promising technology for large scale ...

Thin-film polycrystalline-silicon solar cells on high-temperature glass

Efficient thin-film polycrystalline-silicon (pc-Si) solar cells on foreign substrates could lower the price of photovoltaic electricity. Aluminum-induced crystallization (AIC) of amorphous silicon (a ...

[Polycrystalline silicon on glass thin-film solar cells: A ...]

The paper presents a review of major features of the crystalline silicon on glass (CSG) technology, its achievements, limitations and challenges, and latest developments. CSG cells ...

[Growth of polycrystalline silicon on glass for thin-film solar ...]

Apr 1, 2010 · Abstract Polycrystalline Si (poly-Si) thin-film solar cells on glass feature the potential to reach high single-junction efficiencies at low costs.

[Polycrystalline silicon thin-film solar cells on glass by ion ...]

Polycrystalline silicon (pc-Si, grain size > 1µm, no amorphous tissue) on glass is an interesting material for thin-film solar cells due to the low costs, the abundance and the non-toxic ...

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