

What is a plated contact solar cell?

The plated contacts have a crystalline structure to ensure low series resistance. Solar cells based on plating technology have been manufactured in mass production as early as the 1990s when BP Solar commercialized UNSW's Buried Contact Solar Cells.

What is the standard adhesion strength for solar cell metallization?

Adhesion strength is defined as the force needed to peel an adhesive film from any given surface. The standard DIN EN 50461 "Solar Cells" defined standard adhesion strength of 1.0 N/mm for Ni/Cu films on solar cell metallization. A 1.5 N/mm adhesion strength specification has been accepted.

How to improve solar cells with mask and plate front metallization?

A further improvement of III-V//Si solar cells with mask and plate front metallization can be achieved by simply reducing the shading finger width w_f and busbar width. Mask and plate contacts with feature sizes of 10 μm are already available today (see Fig. 3 b).

Are mask and plate front metallization techniques suitable for III-V-based solar cells?

The similar i values underline the great potential of the mask and plate front metallization for III-V-based solar cells. Moreover, these results are in line with the simulation results predicting a similar performance of the front metallization techniques under comparison (see Fig. 5 a).

Can mask and plate metallization be used in tandem solar cell fabrication?

Since the novel mask and plate approach was identified as a very promising metallization method in the previous section, it was integrated into III-V//Si tandem solar cell fabrication. This section focuses on key solar cell results of such devices.

Can mask and plate metallization transform photovoltaic processing?

Considering cost and scaling potential, mask and plate has the potential to transform the processing of any III-V-based photovoltaic device. In III-V solar cell manufacturing, mask and plate front metallization follows MOVPE growth and replaces both a photolithography and an evaporation process sequence.

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However, due to their toxicity and the stringent regulations against water pollution and costly effluent disposal, non-cyanide and low-cyanide baths have been investigated and used for commercial plating (Schlesinger ...

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