

Can polymer substrates be used for foldable solar cells?

Besides paper and woven fabric, the normally used polymer substrates can also be applied as the substrates for foldable solar cells. Kaltenbrunner et al. demonstrated ultrathin perovskite solar cells on 1.4×10^{-3} m PET substrates, which exhibited stabilized efficiency of 12% and a power-per-weight as high as 23 W g^{-1} .

Can thin-film photovoltaic layers improve cell performance?

Improvements in cell performance through the use of thin photovoltaic layers on metallic structures have subsequently been reported. [203, 204] The current record efficiency for single-junction solar cells, 29.1%, was achieved by a thin-film GaAs cell layer transferred onto a metallized flexible film. [100, 205]

Do flexible SHJ modules address load-bearing issues in building-integrated photovoltaics?

The flexible SHJ modules demonstrated in this study may address the load-bearing issue encountered in the fast-growing research field of building-integrated photovoltaics and enable c-Si solar modules to be attached to building walls with either flat or curved surfaces.

How is a photovoltaic layer bonded to a substrate?

The GaAs and In_{0.5}Ga_{0.5}As photovoltaic layers were epitaxially grown on GaAs and InP substrates, respectively. Then, the upper GaAs subcell and the lower In_{0.5}Ga_{0.5}As subcell with an InP window layer atop were bonded to each other, followed by the removal of the GaAs substrate by chemical etching.

Can photovoltaic modules be used as alternative energy sources?

To enable widespread use of photovoltaic modules as a primary source of alternative electricity, it is essential to reduce the production cost of solar cells. One promising approach is the reuse of expensive crystalline semiconductor substrates from high-efficiency cells.

Can a simple semiconductor bonding scheme be used for high-efficiency solar cells?

This simple semiconductor bonding scheme, mediated by functional agents that generate built-in subcells, has the potential to enable low-cost, high-throughput production of high-efficiency multijunction solar cells. Cross-sectional scanning electron microscope image of the bonded InP/PEDOT:PSS/Si heterostructure. Reproduced with permission.

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