

# Greatcell Solar, the company, the development of graphene based perovskite solar panels

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Abstract (Century Gothic 11)

1. Greatcell Solar Italia is part of the Greatcell Solar group. The Company was founded to develop, scale-up and commercialise the rapidly emerging 3rd generation solar photovoltaic (PV)

Greatcell Solar is at the forefront of the global development of 3rd Generation Perovskite Solar Cell energy production. Our innovation strategy is leading the way on two principal fronts: (1) Glass substrates – similar to 1st and 2nd generation solar panels and; 2) on the more exciting application of PSC applied to Metal substrates such as industrial and residential roofing.

2, Materials and equipment

Greatcell Solar has an advanced chemicals manufacturing plant that supplies the global academic and research community with both specialty chemicals and equipment for DSC and PSC research.

Greatcell Solar produces a cutting edge LED solar simulator that is rapidly becoming a benchmark for PV measures.

3. General PSC focus/status/update

Greatcell Solar is developing long-life industrial perovskite solar cell (PSC) products on both glass and metal substrates. The key requirements for such applications are a suitable combination of high efficiency, intrinsic material stability, device packaging for durability against environmental degradation, and low cost thanks to economical materials and processes. Working with many technology partners

globally, both upstream and downstream, the company sources prospective technologies to solve key challenges for industrialising PSC devices. These are then validated internally, first at small cell size (1 cm<sup>2</sup>) and then on 100 cm<sup>2</sup> modules and larger during subsequent process development and scale-up. A snapshot of the status and progress in commercialising this innovative new technology will be provided.

4. Some graphene-PSC data

One material explored by Greatcell Solar for us in PSC device advancement is graphene. Graphene has been applied as an interfacial modifier, charge selective contact layer, and also as a current collector, with various degrees of success in different PSC device architectures. Graphene also shows promise as an environmental barrier material, especially for flexible PSC systems. Some example case applications for graphene in PSC will be discussed

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References

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Figures

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