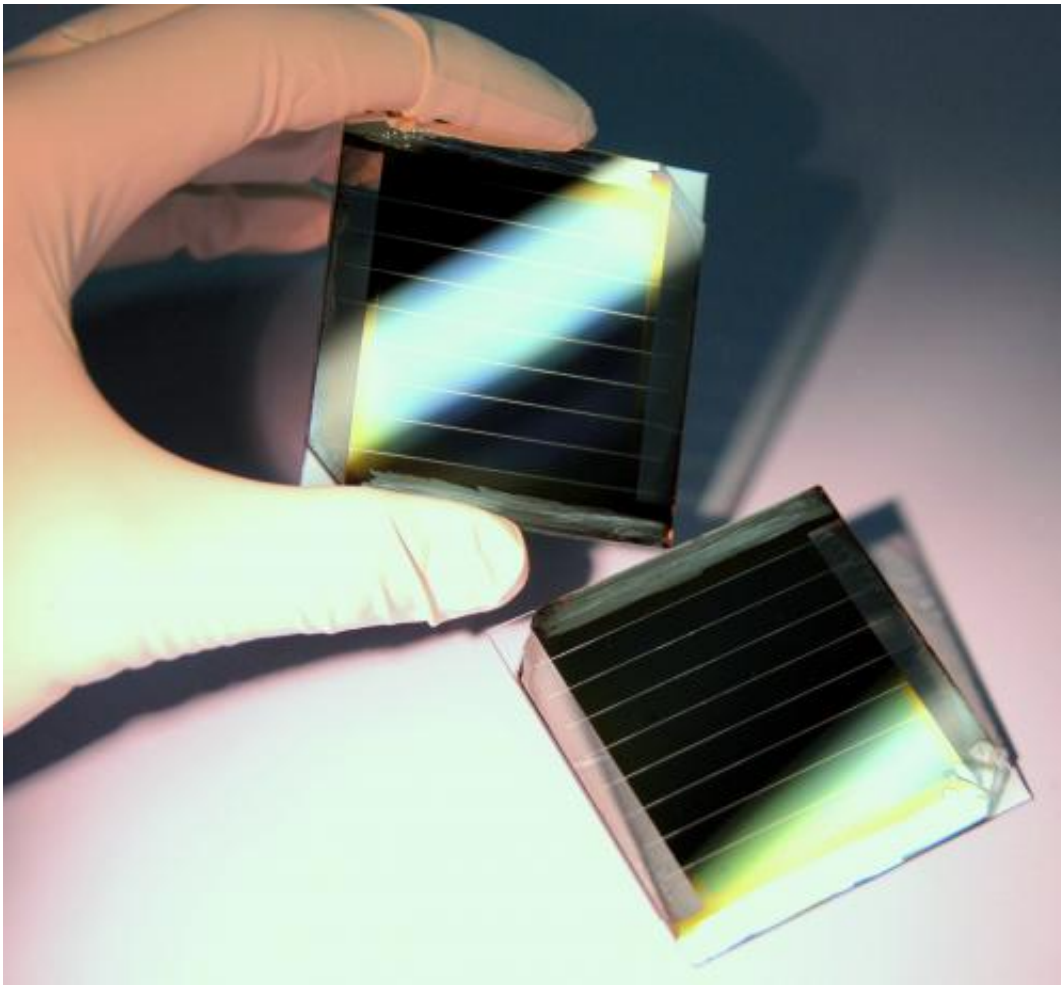


# Researchers announce world record efficiency for organic photovoltaic module

September 24 2012

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Organic photovoltaic module with a world-record certified efficiency of 5.5 percent.

Imec and the chemicals company Solvay have announced an organic photovoltaic module with a world-record certified efficiency of 5.5 percent. An optimum performance at module-level is a crucial step towards upscaling the production process and successful commercialization of organic photovoltaic cells. This result was achieved using a novel inverted bulk heterojunction architecture developed by imec in close collaboration with Solvay and a proprietary ActivInk™ semiconductor from Polyera.

Organic solar cells hold the potential for integration into building facades and windows, due to their optical translucency and ability to be manufactured on large areas at high-throughput. The efficiency of organic solar cells is less dependent on the intensity and the angle of the incoming light; however, to become a relevant industrial solution, upscaling towards an industrial process is necessary, as is a further increase in performance and longer lifetime.

Imec's research program on organic solar cells tackles all the challenges to make the organic [photovoltaic technology](#) ready for market introduction. Imec developed a dedicated inverted bulk heterojunction architecture for polymer-based solar cells. This architecture simultaneously optimizes cell light management and increases device stability. After demonstrating excellent efficiency results at the cell level in 2011, imec and Solvay developed a process to integrate inverted bulk heterojunction solar cells in an efficient module that uses 95 percent of the aperture area to generate electricity. A module efficiency as high as 5.5 percent on a 16cm<sup>2</sup> aperture area was achieved, a world-record for organic photovoltaic modules.

Tom Aernouts, R&D group leader of organic photovoltaics at [imec](#), noted: "We are excited to have achieved these excellent results at module level. They are an important step towards upscaling organic solar cell technology to high-volume production. With further device and

module structure optimizations and optimization of the photo-active material of the cell, we will continue increasing efficiency and lifetime, which are essential advancements for developing an industry-relevant technology for [organic solar cells](#)."

Provided by IMEC

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