

Press Release

Freiburg
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Fraunhofer ISE researches for the Cluster of Excellence "Solar Valley Mitteldeutschland"

Researchers in Freiburg start pilot project on the optimization and manufacture of solar cells

In the Cluster of Excellence competition last year in September organized by the German Federal Ministry for Education and Research (BMBF), the "Solar Valley Mitteldeutschland" was one of five prize winners. After the authorization of the individual projects, the Cluster of Excellence pilot project began several weeks ago at the Fraunhofer Institute for Solar Energy Systems ISE. This research institute in Freiburg is working on the optimization and manufacture of solar cells for the regionally oriented Cluster of Excellence winner.

Both minimizing material use by producing thinner cells as well as increasing the cell efficiency play essential roles in this project, which is the largest single project within the Cluster. The goal of the project 'xμ Cells' is to develop procedures for manufacturing 130 μm thin wafers (on a time scale of 2 years) and 80 μm thin wafers (on a time scale of 5 years) on areas of at least 12.5 x 12.5 cm². To reach these milestones, the participating companies and institutes chose Fraunhofer ISE to be a scientific partner in the Cluster. The researchers in Freiburg have already achieved several record efficiencies with small laboratory cells, including, for example, an efficiency of 20.4 % for a 1 cm² cell – the world-best value to date for a multicrystalline silicon solar cell.

"As the largest R&D partner in the project 'xμ Cells', we at Fraunhofer ISE are looking forward to increasing the speed in achieving our goal of grid parity for solar electricity together with our long-time partners in Central Germany", says Ralf

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Preu, Department Head of PV Production Technology and Quality Assurance at Fraunhofer ISE. "In the area of near to industrial solar cell processing, we have already realized much success with the industry partners in the Cluster of Excellence in the past", explains Preu. In total, about 200 employees at Fraunhofer ISE are presently working in this research area.

In the EU supported project Crystal Clear, Fraunhofer ISE together with SolarWorld manufactured 130µm thin solar cells (12.5 x 12.5 cm²) with a stable efficiency of 18.0 % on a demonstration scale. "With this result, we could demonstrate the feasibility of an industrial production of such thin cells at a high power level for the first time. Now we intend to build on these experiences and support the industrial partners in striving towards even higher efficiencies with new cell structures and processing technologies."

In the Cluster of Excellence, the area of cell development is embedded in other projects involving wafer and module technology. The over-all scientific coordination of the project is carried out by the Fraunhofer Center for Silicon Photovoltaics CSP in Halle, which is a joint center belonging to the Fraunhofer Institute for Mechanics of Materials IWM in Halle as well as the Fraunhofer Institute for Solar Energy Systems ISE in Freiburg.

About "Solar Valley Mitteldeutschland"

A goal of the regional group made up of 27 companies as well as 12 research facilities from the provinces of Thuringia, Saxony-Anhalt and Saxony is to reduce the costs of solar electricity. Here the aim is that by 2015 at the latest, decentralized photovoltaic installations, e.g. roof systems, etc. shall produce solar electricity that is cheaper than electricity from the grid. One of the most important keys to reduce the costs of solar electricity production is the cell technology. Due to its special international position and expertise in the area of cell technology, Fraunhofer ISE is

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participating as a strategic member in this cluster –
www.solarvalley.org.

**Text of the PI and Photos can be downloaded from our
web page: www.ise.fraunhofer.de**

Information Material

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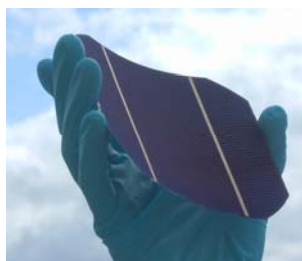
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130 µm thin solar cell, slightly flexible, and with an efficiency of 18 %. The industrially pre-processed solar cell was produced at Fraunhofer ISE using a special manufacturing process. To increase the efficiency and to prevent mechanical strain, the fractional area of the contacts on the cell was considerably reduced on the front and the back side.