

Max Planck Innovation awards license to Solexel for an innovative method to develop thin-film solar cells

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Max Planck Innovation GmbH, the technology transfer agency of the Max Planck Society, Germany's leading basic research organization, has signed a co-exclusive license agreement for its Porous-Silicon-Process (PSI process) technology with Solexel, Inc., a company focusing on the development and commercialisation of high-efficiency thin-film photovoltaic arrays and solar modules.

Fueled by high energy prices, the market for solar cells is experiencing an enormous boost. The rising demand is currently leading to increased costs for pure mono-crystalline silicon, which is needed for the manufacture of high-efficiency solar cells. Thin film solar cells offer a great opportunity for cost reduction, since they require less mono-crystalline silicon. The technology licensed in by Solexel relates to a new method to produce thin film solar cells. The method, which was developed by Rolf Brendel during his time at the Max Planck Institute for Metals Research in Stuttgart, is based on the production and use of a reusable template substrate with a porous structured surface layer. A thin mono-crystalline silicon film is grown on top of the porous layer by epitaxial methods showing the same pattern. Subsequently a structured thin film solar cell can efficiently be separated from the substrate.

The benefits of this new method to manufacture thin film solar cells are manifold: Using epitaxy, the film thickness can be reduced to 20 to 30 µm. Conventional solar cells are 200 to 300 µm thick since a thick planar layer has to be produced, which is then structured by removing material. Thus expensive mono-crystalline silicon can be saved. Furthermore the manufacturing process takes less time and requires lower manufacturing temperatures. A major benefit is the template substrate, which can be made of low-cost porous silicon and which can be used several times. Moreover the new technology enables the manufacture of silicon solar cells with excellent light absorption and excellent efficiency.

“Solexel is an aspiring, innovative company based in Silicon Valley, California, developing, producing, and with plan to sell highly innovative, differentiated photovoltaic products”, according to Dr. Bernd Ctortecka, patent & licence manager at Max Planck Innovation. “The PSI-technology perfectly fits in their overall business and product strategy to offer disruptive high-efficiency mono-crystalline silicon cell technology”. Solexel plans to enter the marketplace with a high-efficiency mono-crystalline solar module. Solexel's module will use 156 mm x 156 mm cells and will consume substantially less silicon per watt than conventionally fabricated wafer-based solar cells. “The combination of Solexel's core intellectual property in conjunction with the new technology licensed from the Max Planck Society enables us to produce highly efficient thin solar cells, which are also substantially more economical with respect to the production processes and materials consumption, and substantially strengthens our overall comprehensive intellectual property portfolio”, says Dr. Mehrdad Moslehi Founder, Executive Chairman, and Chief Technology Officer of Solexel. The solar cells and modules manufactured with this technology and the resulting cost-saving method can be used for several applications from grid-connected solar modules to solar powered portable electronics, photovoltaic arrays, and solar applications in space.

About Solexel

SOLEXEL, INC. is a venture-backed company based in Silicon Valley, California, U.S.A., and is developing a high-efficiency, low-cost-per-watt solar PV module product enabling unsubsidized grid parity for grid-tied residential, commercial, utility-scale power farm PV applications. Solexel's approach is based on a disruptive, IP-protected, thin-film, mono-crystalline silicon solar cell technology which reduces silicon consumption by a significant margin compared to the current paradigm and substantially eliminates dependency on the silicon feedstock, ingot, and wafer supply chain. Active cell area is made through the use of plentiful, inexpensive silicon gas, as opposed to costly bulk silicon wafers. This results in a disruptive reduction in use of silicon, elimination of feedstock dependency & ingot growth & wafering, and a significant reduction of the overall cell and module production costs. Besides the mainstream PV power panels, Solexel's technology also enables economic production of aesthetically-appealing, high-efficiency, PV products for Building-Integrated Photovoltaics (BIPV) applications.

About Max Planck Innovation

Max Planck Innovation advises and supports scientists of the Max Planck Society in evaluating inventions and filing patent applications. Max Planck Innovation markets patents and technologies to industry and coaches founders of new companies based on research results from Max Planck Institutes.

Every year, Max Planck Innovation evaluates about 150 inventions, of which about half lead to the filing of a patent application. Since 2000, Max Planck Innovation advised about 50 spin-offs, closed more than 700 license deals and generated proceeds of more than 140 million Euros for inventors, institutes and the Max Planck Society. As a result, Max Planck Innovation is among the world's most successful technology transfer organizations.

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