

Alta Devices Discloses Key Technologies to Serve a New Class of Solar Applications

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Flexible Sheets of High Efficiency Solar Cells Enable Adaptable Form Factors

At this week's IEEE Photovoltaics Specialists Conference (PVSC), Alta Devices™ disclosed details of key technologies that enabled its latest record module result. Alta described how its thin film solar cells are interconnected into flexible sheets creating a new class of solar material that leverages the company's record-setting high efficiency Gallium Arsenide (GaAs) solar cell technology. These breakthroughs enable flexible solar material that can be formed into different shapes and sizes, making possible new and unique solar applications.

"Up until now, the applications of relatively high efficiency solar have been constrained to those that utilize large and heavy glass plates," said Chris Norris, Alta president and CEO. "But the technology being disclosed this week has the potential to change both the applications and economics of solar."

Alta's solar material can be used differently from those that have been available; it allows meaningful power production anywhere the sun is shining. This results directly from the high efficiency of Alta's material combined with its thin and flexible nature. It can be deployed in many new kinds of solar applications including: electric vehicles, aircraft and unmanned drones, portable power, roof tiles and other building-integrated uses, and more. Because of the characteristics of Alta's solar technology, the high cost of an entire solar energy system is reduced.

"When you are able to use solar in nearly any form, the applications broaden and the system complexity and cost are dramatically reduced," explained Norris, "And, ultimately, both the economic returns and human benefits increase." (For more discussion of this, see Alta Devices Blog at <http://altadevices-blog.com/?p=57>).

At the PVSC, Dr. Laila Mattos presented how Alta was able to reach a new world record of 23.5% solar module efficiency -- a result confirmed by the National Renewable Energy Lab (see earlier press release <https://www.altadevices.com/emarketing/alta/press.page>). In addition to underscoring various previously disclosed techniques for overcoming the cost and complexity of using GaAs (one of the most efficient solar materials known), the presentation explained how Alta was able to maintain its efficiency advantage while creating flexible sheets that can be of nearly any size. Specifically, Dr. Mattos revealed that Alta's solar cells are self-interconnected in a way that maximizes the light captured by the thin, flexible sheets.

Dr. Mattos explained, “Traditionally, when solar cells are interconnected to form a module, conversion efficiency is compromised because active solar material is covered with metal busbars and wires, preventing some of the light from entering the cells. In addition, gaps between cells create areas of the module that are not able to convert incident light to electrical energy. The key to improving solar performance at the module level is to avoid these problems. Enabled by our cell flexibility, we use a self-interconnected technology that eliminates the wires, thus maximizing the cells’ exposure to incident light. The self-interconnected cells form a flexible sheet with no gaps and that can be of any size or aspect ratio.” For more information, see http://www.ieee-pvsc.org/ePVSC/core_routines/view_abstract_no.php?show_close_window=yes&abstractno=554.

According to Norris, construction of Alta’s pilot manufacturing facility is underway, with expectations of material available by the beginning of 2013. “We take every step of our business systematically and don’t underestimate the challenges. We are committed to thinking differently about solar energy and how it is used, and are dedicated to realizing its potential to improve lives around the world.”

About Alta

Alta Devices (www.altadevices.com) was founded in 2007 and is focused on making solar power cost competitive with fossil fuels and accessible anywhere the sun shines. Using a variety of proprietary manufacturing techniques and a unique approach to device design, Alta has invented the world's thinnest and highest efficiency solar cells. Alta's flexible cells hold the world records for cell and module efficiency, and are ideal for incorporating into roofing and building materials, providing power for air and ground transportation, enabling cost effective distributed and off-grid power generation, and for deployment in utility scale solar farms. Alta is currently a development stage company and has received venture capital funding from August Capital, Kleiner Perkins Caufield & Byers, Crosslink Capital, AIMCo and others. The company is based in Sunnyvale, CA.

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