MIT spin-off plans to manufacture cheap, efficient solar cells

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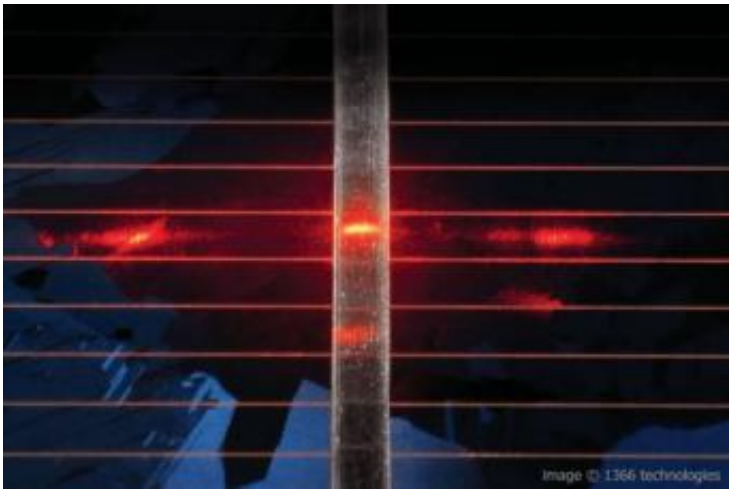

In the new solar cell design by MIT researchers, more light can be captured, increasing efficiency and decreasing cost per watt. Image credit: 1366 Technologies.

Researchers from MIT have improved commercial solar cells that will soon be significantly cheaper and more efficient than those available today. Ely Sachs, a professor of mechanical engineering at MIT, predicts that by 2012 such solar cells will be comparable in price with coal, which is about $1 per watt.

Sachs and his colleagues have started a company called 1366 Technologies. With the help of a recent $12.4 million grant, the team is building a pilot-scale manufacturing plant to fabricate their first batch of

solar cells. The cells currently have an efficiency of 19.5%, and cost about $1.65 per watt. That´s a 27% improvement in efficiency over similar commercial solar cells of today, which have about 15% efficiency and cost about $2.10 per watt.

1366 Technologies´ solar cells are made from multi-crystalline silicon - a material that is normally less efficient than top quality single-crystal cells, but significantly cheaper. However, with the improvements by Sach´s group, the multi-crystalline solar cells reach about the same efficiency as the single-crystal variety.

Over the next year, the group will decide whether their pilot manufacturing results justify building a factory for commercial production. Sachs also predicts that the cost of the solar cells will drop to around $1.35 per watt in the near future, due to anticipated advances.

One of the biggest improvements to the new design is the addition of texture to the surface of the solar cells. In the past, this step has been very difficult for researchers to achieve with multi-crystalline silicon. The rough surface allows the cells to capture more light, since it bends the light and causes it to bounce around longer inside the cell, rather than reflect straight off the back and exit the cell. The researchers also etched wires inside the solar cell so that they too allow more light to enter the cell. Another improvement involved making the silver wires that harvest the current very thin, which cuts down on the cost and allows more light to enter the cell.

Sachs, who is taking a leave of absence from MIT to help build the company, says that other solar cell makers will be free to use 1366 Technologies´ designs, and hopefully make solar power a more affordable and efficient method to meet global energy requirements. In the future, the company hopes to build industrial, 100-megawatt plants around the world.

"Once the pilot plant has proven itself, we´ll work with governments and energy agencies worldwide to build a string of factories," said Carmichael Roberts. Roberts is a general partner at North Bridge Venture Partners, which - along with Polaris Venture Partners - is funding 1366 Technologies. Roberts is also joining 1366 Technologies´ board of directors as chairman.

More information: 1366tech.com

via: MIT Technology Review