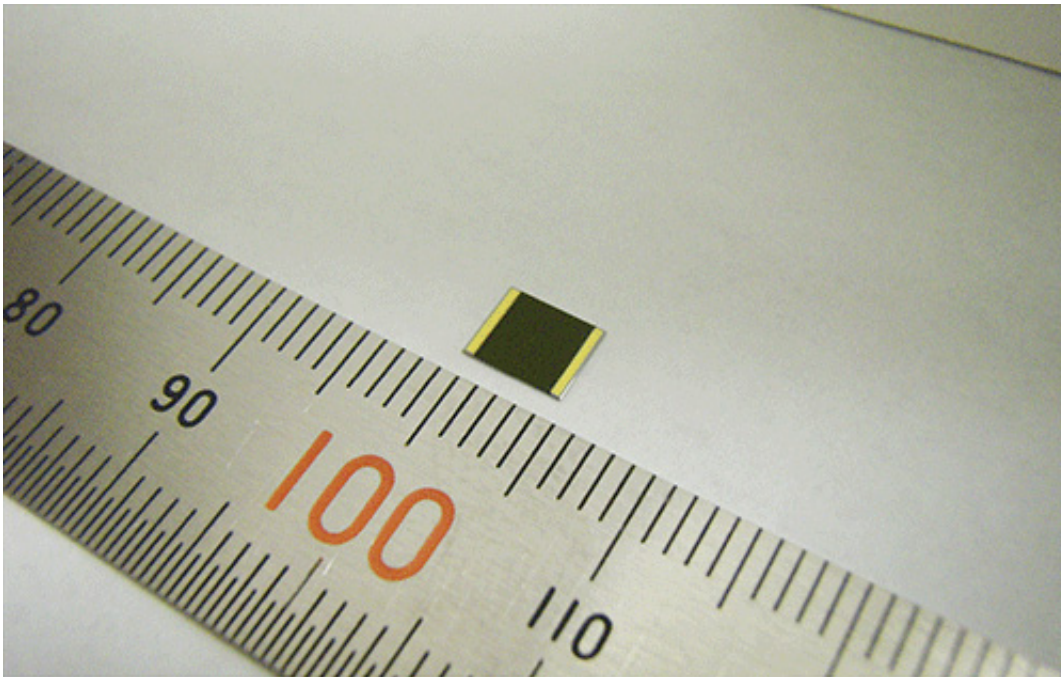


# Concentrator solar cell with world's highest conversion efficiency of 44.4%

June 14 2013

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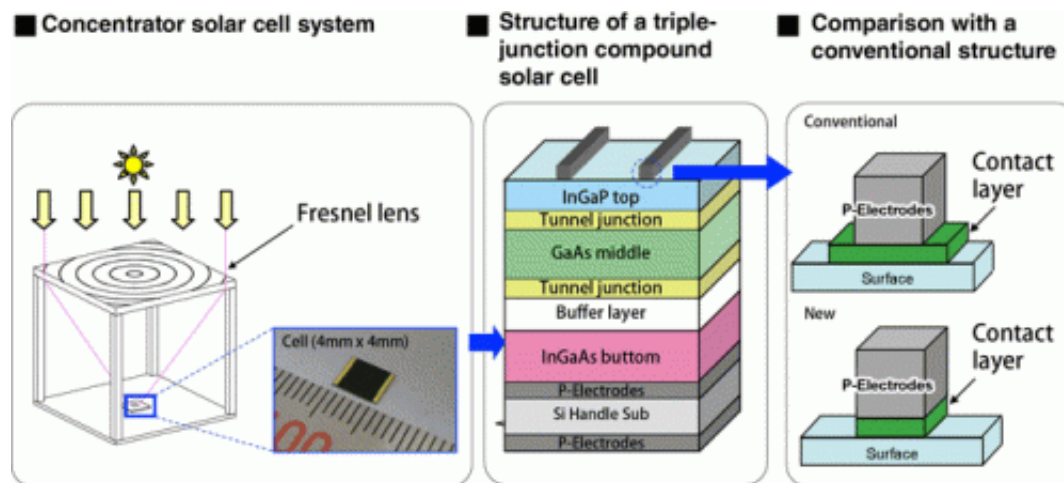
Concentrator Solar Cell with World's Highest Conversion Efficiency of 44.4%.

Sharp Corporation has achieved the world's highest solar cell conversion efficiency of 44.4%, using a concentrator triple-junction compound solar cell. These solar cells are used in a lens-based concentrator system that focuses sunlight on the cells to generate electricity.

This latest Sharp breakthrough came about through [research and development](#) efforts that are part of the "R&D on Innovative [Solar Cells](#)

" project promoted by Japan's New Energy and Industrial Technology Development Organization (NEDO). Measurement of the value—which sets a record for the world's highest concentrating conversion efficiency—was confirmed at the Fraunhofer Institute for Solar Energy Systems (ISE) in Germany.

Compound solar cells typically offer high conversion efficiency while utilizing photo-absorption layers made from compounds of multiple elements, such as indium and gallium. Sharp's concentrator triple-junction compound solar cells use a proprietary technology that enables the efficient conversion of sunlight into electricity by means of a stack of three photo-absorption layers, the bottommost of which is made from InGaAs (indium gallium arsenide).



To achieve a concentrating conversion efficiency of 44.4%, Sharp worked to widen the effective concentrator cell surface and ensure uniformity of width at the interface of the connecting concentrator cell and electrodes.

Because of their high [conversion efficiency](#), compound solar cells have thus far been used primarily on space satellites. Looking to the future, Sharp aims to harness this latest development success and make the use of compound solar cells more feasible in terrestrial applications.

Provided by Sharp

Citation: Concentrator solar cell with world's highest conversion efficiency of 44.4% (2013, June 14) retrieved 9 April 2024 from

<https://phys.org/news/2013-06-solar-cell-world-highest-conversion.html>

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