



# Black technology homemade solar power generation





## Overview

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Several years ago, an optics expert developed a technique for turning shiny metals pitch black. The trick resulted in a material perfectly suited for absorbing sunlight—so much so that generators built with it produced 15 times more power than comparable devices. New, high-efficiency STEGs were engineered with three strategies: black metal technology on the hot side, covering the black metal with a piece of plastic to make a mini greenhouse, and laser-etched heat sinks on the cold side. Credit: University of Rochester / J. Rochester researcher Chunlei Guo tests a solar thermoelectric generator (STEG) etched with femtosecond laser pulses to boost solar energy absorption and. University of Rochester researcher Chunlei Guo has developed a solar thermoelectric generator (STEG) etched with femtosecond laser pulses that dramatically improves solar energy absorption and efficiency. STEG stands for solar thermoelectric generator.



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### [Researchers Harness Black Metal to Turbocharge Solar Power](#)

The team used black metal to develop a new design for solar thermoelectric generators. Known as STEGs, they can convert various types of thermal energy into electricity.

### [Black Metal Technology Delivers 15x Boost in Solar Power Efficiency](#)

Using his lab's black metal technology, the new design produces a STEG device that is 15 times more efficient than earlier models, opening the door to new possibilities in renewable energy.



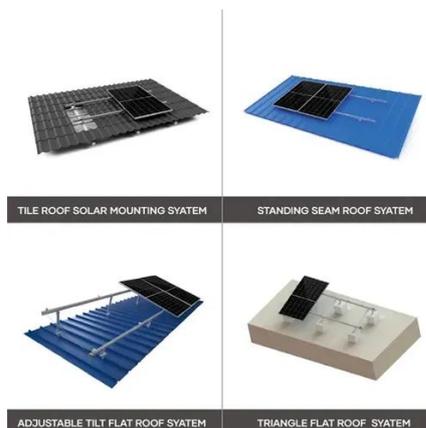
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### [Breakthrough boosts solar thermoelectric generator ...](#)

Discover how black metal and lasers enhance solar thermoelectric generators, improving efficiency and potential applications in clean energy.

### [Black metal could supercharge solar energy production](#)

Researchers at the University of Rochester have developed an innovative black metal design for solar thermoelectric generators (STEGs), which promises to vastly improve energy ...



### [Scientists supercharge solar power 15x with black ...](#)

A Rochester team engineered a new type of solar thermoelectric generator that produces 15 times more power than earlier versions.

### [Black Metal Significantly Boosts Solar Power Generation , Technology](#)

Researchers have engineered a solar thermoelectric generator that is 15 times more efficient than current state-of-the-art devices, by using "black metal" technology in combination with ...



### [Black metal could give a heavy boost to solar power generation](#)

The new, high-efficiency STEGs were engineered with three strategies. First, on the hot side of the STEG, the researchers used a special black metal technology developed in Guo's lab to ...



### [Solar Power Reimagined: New "Black Metal" Device Generates 15x ...](#)



His lab's innovative black metal technology design helps create a STEG device 15 times more efficient than previous devices, paving the way for new renewable energy technologies.



[Laser-blasted 'black metal' could make solar technology 15 times more](#)

The breakthrough lies in a unique, laser-etched "black metal" developed by researchers over the past five years, which they now hope to use in solar thermoelectric generators (STEGs).



[Scientists Turn to 'Black Metal' to Make Ultra-Powerful Solar](#)

Scientists from the University of Rochester have invented a new 'black metal' solar thermoelectric generator (STEG) etched with femtosecond laser pulses that is 15 times more efficient ...





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