

Solar Cells

Most solar panels today are made of two semiconducting materials sandwiched between two metal contacts, like windows in a windowpane. The semiconducting materials absorb the sunlight.

You can see the blue silicon semiconductor and gray metal in the solar panel below

Did you Know?

More energy from the Sun hits the Earth's surface in 2 hours than the entire world uses in a year.

That's huge!

Sandia National Labs

Most solar panels today are made of Si₁₄licon

These solar panels work well, but they are heavy and expensive to make

- ① Sunlight comes in and excites the electrons in the top layer of silicon. The electrons get a lot of energy from the sun's photons

- ② These energetic electrons start to move until they hit the metal electrode. They have too much energy to go back to their atoms

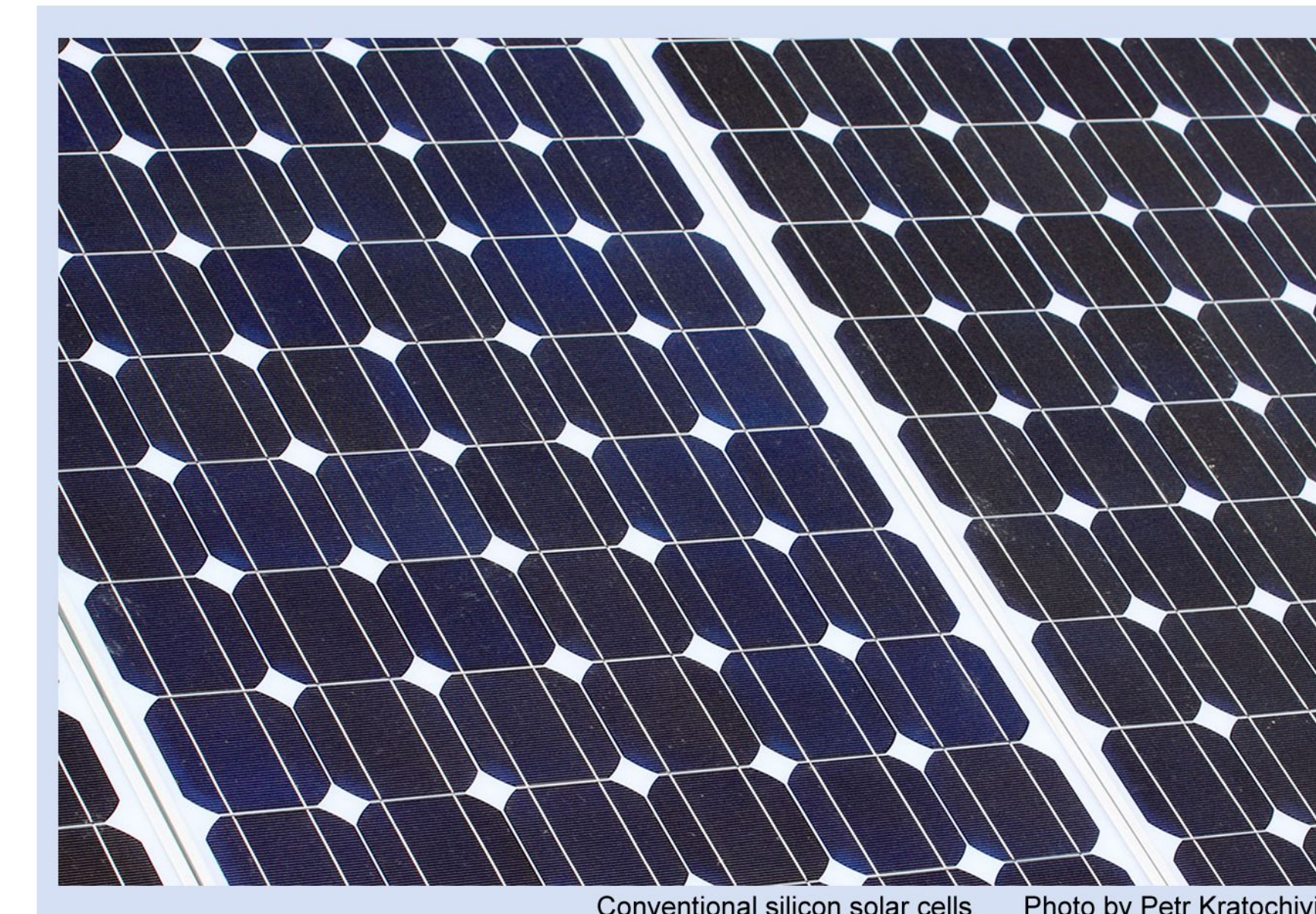
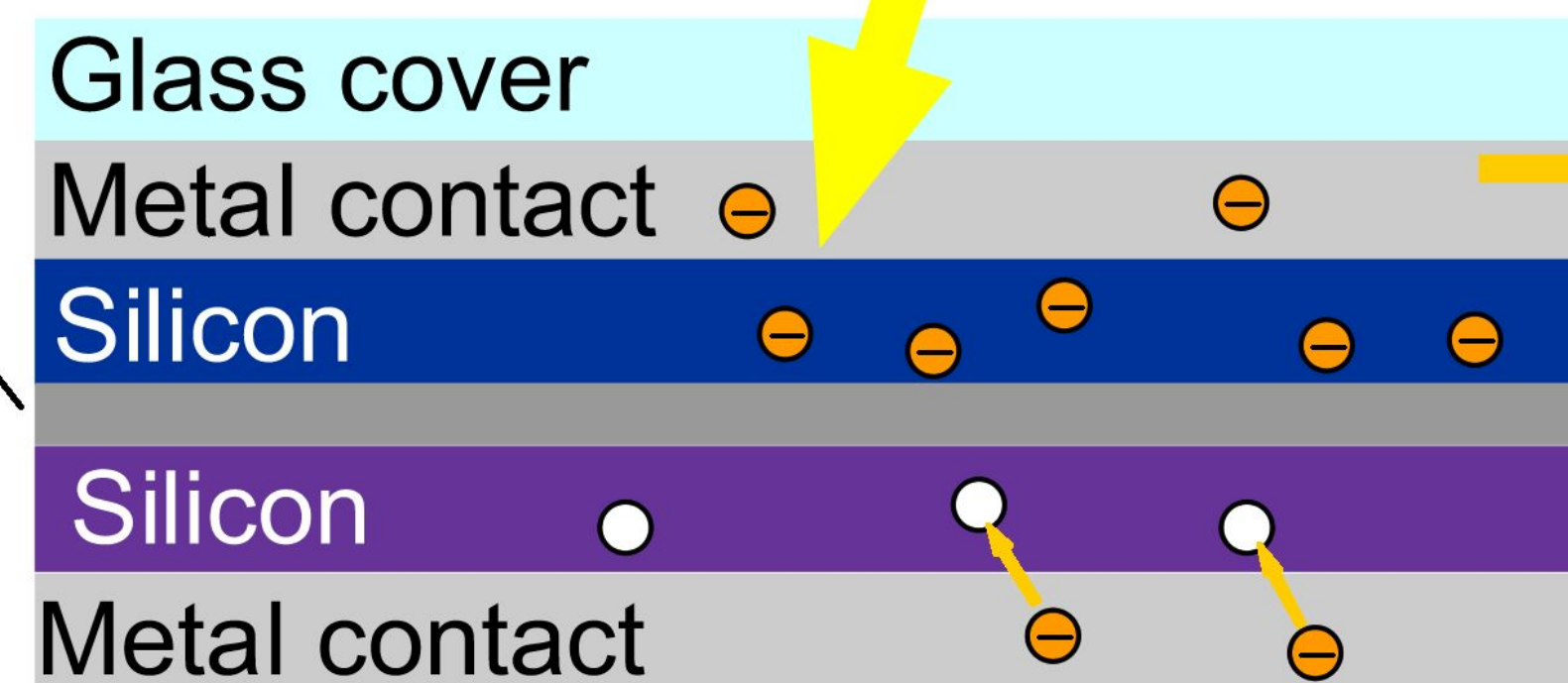
- ③ The electrons have so much energy that they have to do something, so they move through the wire.

- ④ Moving through the wire uses energy, and the less energetic electrons return to the bottom layer of silicon to find a "hole" that they can rest in.

Metal Junction



Image from the United States Department of Energy



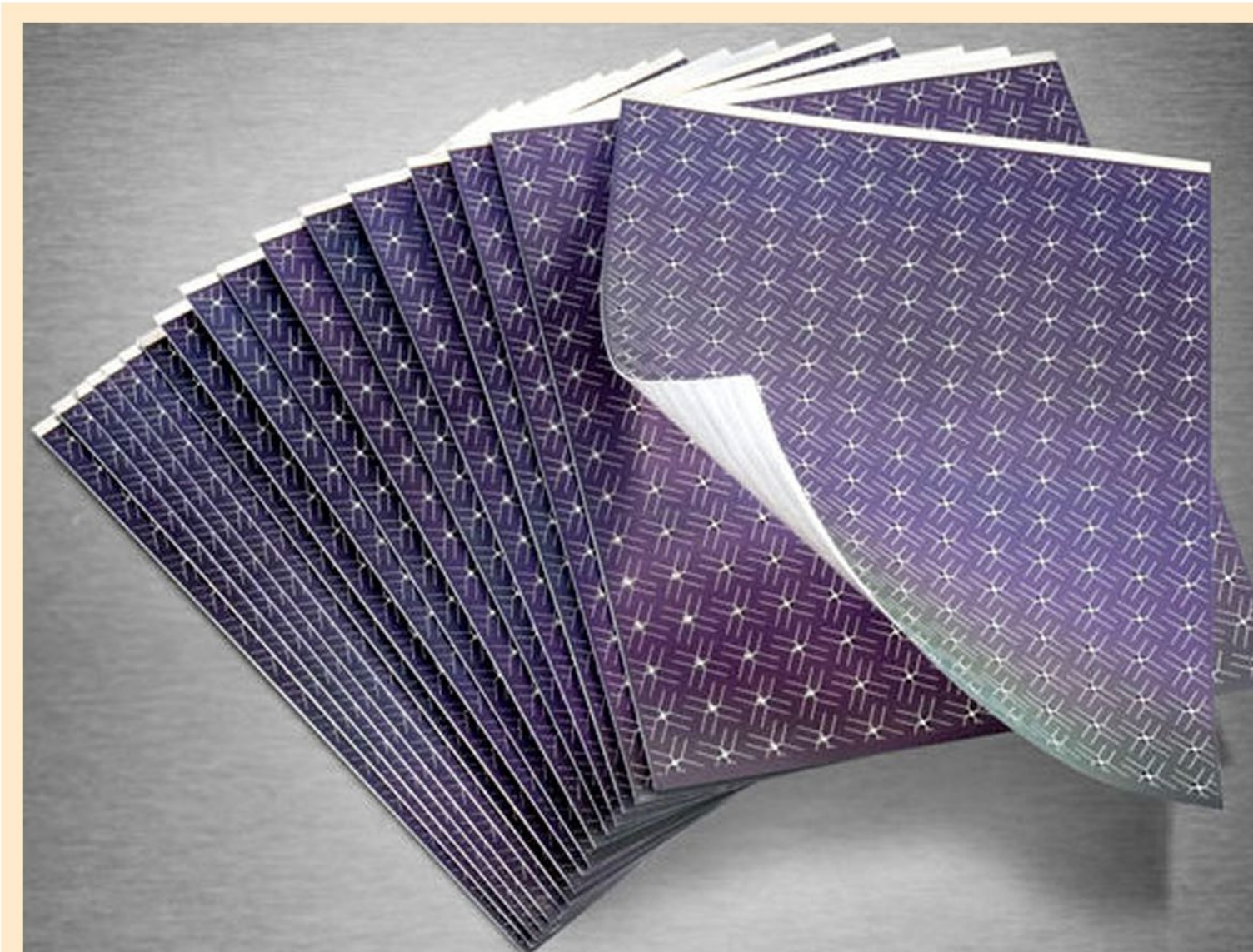
Conventional silicon solar cells Photo by Petr Kratochvil

Organic Solar Cells

Scientists are finding ways to replace the silicon in solar cells with other things now

Some of these solar cells can bend and are cheaper to make, but they may not be as efficient yet

Some scientists are looking at fullerene, mixes of metals, and other materials to make these cells



Nanosolar's flexible solar cells Photo property of Nanosolar

Want to Learn More?

Check out the Wikipedia entries for Solar Cell, Organic Solar Cell and Polymer Solar Cell. Wikipedia can be a great resource if used responsibly

You can also check out the MIT News entry for Printable Solar Cells and gogreena.co.uk/how-solar-panels-work-a-guide-for-dummies/