

Flexible solar cells

Have you ever seen a solar panel on a house or building? Solar panels produce electricity from sunlight— this is also called photovoltaics. Solar-generated electricity is one non-polluting solution that may help reduce our CO₂ emissions and mitigate climate change.

Most solar panels today are made with hundreds of silicon cells. These glass-like cells are durable and efficient, but they are also brittle and expensive to produce. Chemists and materials scientists have developed new chemicals that trap light to generate electricity. These chemicals can be printed as thin films on plastic or metal foil sheets creating a **flexible solar cell**. Someday, inexpensive solar cells may be applied as a flexible roofing material or window covering. Imagine every surface of a building acting as a solar collector!

The UW Washington Clean Energy Testbeds has a large roll-to-roll printer which can print flexible solar cells by the meter. It also has a laboratory to test the sheets they create. Efficiency is how much electrical energy produced by a solar cell divided by how much light energy hits the cell. Researchers are trying to make these cells more efficient to make sure the sheet can survive exposure to intense sunlight, oxygen, water, and heat. Once engineers and chemists solve these challenges, entrepreneurs can start new businesses using this technology to print solar cells.

Engineering is a team effort.

Check your understanding

How are **flexible solar cells** different from silicon solar cells?

What **science and technology professions** are involved with flexible solar cell development?

Why would it be important to increase the **efficiency** of solar cells?

Can you think of a new application for flexible solar cells?



Figure 1 Silicon solar panel on UW dorm roof



Figure 2 Plastic solar cell



Figure 3 Devin McKenzie demonstrates flexible solar cell printer.