

THE DIFFERENCE BETWEEN PHOTOSYNTHESIS AND SOLAR CELLS

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The desire to use solar energy to provide humans with more environmentally friendly electricity has inspired scientists to find the most efficient way to cultivate energy directly from the sun.

Natural solar energy is used by plants in the process of photosynthesis to create chemical energy that fuels the growth of natural life. Scientists have worked to replicate this energy conversion in solar cells.

Energy Processing Differences

Bacteria and other plants use photosynthesis to convert carbon dioxide to carbohydrates, and ultimately, to oxygen and protons. This conversion requires absorption of light, which plants gain from sunlight. After light absorption occurs through the pigment of a plant, it is transferred to the protein center of a plant for eventual conversion to energy.

While photosynthesis is a plant-based chemical process, solar cells, or photovoltaic cells, are man-made and convert solar energy into electricity. Solar cells release short-lived electrons when they come into contact with light. The photons in sunlight react with the silicone in solar cells to cause a transfer of energy.

Energy Output Differences

Plants and organisms use photosynthesis to convert solar energy into chemical energy, using hydrogen, carbon, nitrogen and oxygen. Eventually, respiration of the oxygen created via solar conversion is shared with the environment and provides much of the oxygen in our atmosphere.

On the other hand, solar cells release energy, which then needs to be gathered and conducted into an electrical current. The development into an electrical current forms through the organization of the silicone in the solar cell.

Efficiency of Conversion

Solar cells are more efficient in the process of converting solar photons to energy, according to a study performed at Michigan State University. Scientists found that plants are more conservative in the absorption of solar energy, and too much solar energy can be toxic for a living organism.

A solar cell's primary task is to transmit energy in the form of electricity, a process that causes no damage to the solar cell itself. On the other hand, the energy formed by a plant is of a higher concentration and in liquid form.

Energy Storage Differences

Currently, harvested solar energy from photovoltaic cells is turned directly into an electrical current. This is somewhat problematic because if it's not used right away, it discharges and disappears. The only way to store electricity is with an external device, such as a battery.

In plants with chlorophyll, the process of photosynthesis creates complex molecules that retain the stored energy. The conversion of energy is in a form that the plant can either use immediately or draw on as needed.

Source

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<https://education.seattlepi.com/difference-between-photosynthesis-solar-cells-4700.html>