

## **ALL-WEATHER SOLAR CELLS**

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Solar panels are the future of humanity. That’s the thought that comes to mind when you learn more and more about the world situation. The trend is that the percentage of electricity generated by solar panels is increasing every year. Thanks to numerous advances in photovoltaic technology, in recent years the average conversion efficiency of panels has increased from 15% to more than 20%. The undoubted advantage of solar panels is that they significantly reduce greenhouse gas emissions and are a renewable energy source. And this technology continues to be developed.

Extracting energy from the sun literally describes the whole point of a solar panel. But is it really so? A team of scientists from the Ocean University of China and Yunnan Normal University have developed solar cells able to generate power even in the rain. Not only that, they have advanced a solution to the problem of generating electricity at night. In 2017, they introduced a new material called long-life phosphor (LPP). It can store energy from sunlight during the day and convert it into electricity at night.

In other words, the solar panels of the future will be universal. And that says a lot. For example, portability. It means that no matter where you are: on a trip, in the middle of the desert, or on Mars, you will have electricity at any time of day. If you combine this with SpaceX's new Starlink technology, you also have access to the Internet anywhere in the world. If we return to the current realities, such as the problem with electricity in Ukraine, then if there were solar panels on the roof of every apartment building, you wouldn't have to worry about the electricity being cut off. Not only that, it would be a boon to a very powerful energy system.

There are many impressive discoveries and inventions ahead. The potential of electricity production from portable renewable sources in all weather conditions is a very hot topic which will definitely help mankind in its development, making our life on planet Earth better and more environmentally friendly.

#### **References:**

Fang Yu, Yanmin Yang, Xianyuan Su, Chao Mi, & Hyo Jin Seo, A. (2015, February 13). *Novel long persistent luminescence phosphors*. Retrieved from <https://opg.optica.org/ome/fulltext.cfm?uri=ome-5-3-585&id=312023>

Jason Svarc, A. (2022, July 28). *Most Efficient Solar Panels 2022*. Retrieved from <https://www.cleanenergyreviews.info/blog/most-efficient-solar-panels>

Renewable energy statistics. (2022, 18 January). Retrieved from [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable\\_energy\\_statistics](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Renewable_energy_statistics)

Vourvoulis, A. (2022, October 7). *Pros and Cons of Solar Energy*. Retrieved from <https://www.greenmatch.co.uk/blog/2014/08/5-advantages-and-5-disadvantages-of-solar-energy>

Zayan Guedim, A. (2017, February 28). *Rain is no Problem for These All-Weather Solar Pan*. Retrieved from <https://edgy.app/all-weather-solar-panels>