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DEVELOPMENT OF FLEXIBLE SUPERCAPACITOR

Scientists from Lviv Polytechnic National University, in collaboration with the Taiwan Textile Research Institute, have come up with a flexible fabric supercapacitor that runs on a solar battery. The device is a compact energy saving system that bends and attaches to most surfaces.

Work on the invention began back in the 1990s in the laboratory of Korniy Tovstyuk, a correspondent of Academy of Sciences of Ukraine, in Chernivtsi. In 1993, LLP "Acer" was created specifically for the development of the supercapacitor and systems that use it, which carried out several projects with partners from the USA, Japan, and Germany. Since the first

half of the 2000s Lviv Polytechnic National University has been working in this direction.

The invention is an autonomous power supply system for household appliances. The principle of its operation is that the solar cell generates an electrical signal, which subsequently enters a supercapacitor with a large capacity. It accumulates energy, and then optimally distributes it with the help of a special electronic manager.

Flexible part, where solar energy is converted into electricity, has already been developed in the world. But Lviv scientists created a flexible supercapacitor, which would allow the implementation of an autonomous system.

First embodiment of the technology was a bag in which you can charge just a mobile phone, because its power is only 2 watts. Now they are working on creating more powerful systems that can charge a tablet or laptop and are also working to create a flexible light-emitting device based on it. Developers say that there can be many modifications of the autonomous power source. If you increase the power of the installation, you can supply energy to the whole house. If used on surface of tourist tents it can be a permanent accumulator of solar energy and make it possible to heat the tent or cook food on electrical appliances without lighting a fire. In addition, the system works even in diffused sunlight.

The flexible fabric supercapacitor was included in the top 100 research and development projects in the world according to the influential scientific journal "Research & Development". This proves that flexible fabric supercapacitors will be in high demand once they reach the stage of mass production.