

NTU has developed a perovskite solar panel with an unprecedented 18.1% efficiency

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In recent months, it has begun to look like perovskite solar panels could actually become a useful method of generating electricity. With their effectiveness, they begin to approach classic silicon solar panels (while a few years ago they were really very inefficient), they can be flexible and even partially transparent, which allows them to be used even where it is not possible with conventional panels. Hybrid panels combining silicon and perovskite panels in one also look promising. At Nanyang Technological University, Singapore (NTU Singapore), they have so far focused on pure perovskite panels and have achieved record efficiencies on panels larger than 10 cm².

The problem is that many existing perovskite panels, which have only been tested in the laboratory, have a very small area of up to 1 cm². This is due to the fact that their production on a larger area is very problematic. In addition, various defects and problems with uniformity are reflected in lower efficiency, which would not look nearly as good on paper (and, of course, in real life).

However, NTU used another method, the so-called thermal evaporation, which is used, for example, in the production of OLED screens. It is therefore a method that is able to easily create even larger areas and, in addition, is now commonly used. The test sample had an area of 21 cm² and its efficiency reached a record 18.1% for such a "large" panel. Further development of these scientists is aimed at the development of hybrid (tandem) panels that will combine silicon and perovskite versions. Each is sensitive to different light and can easily work together to significantly increase efficiency.