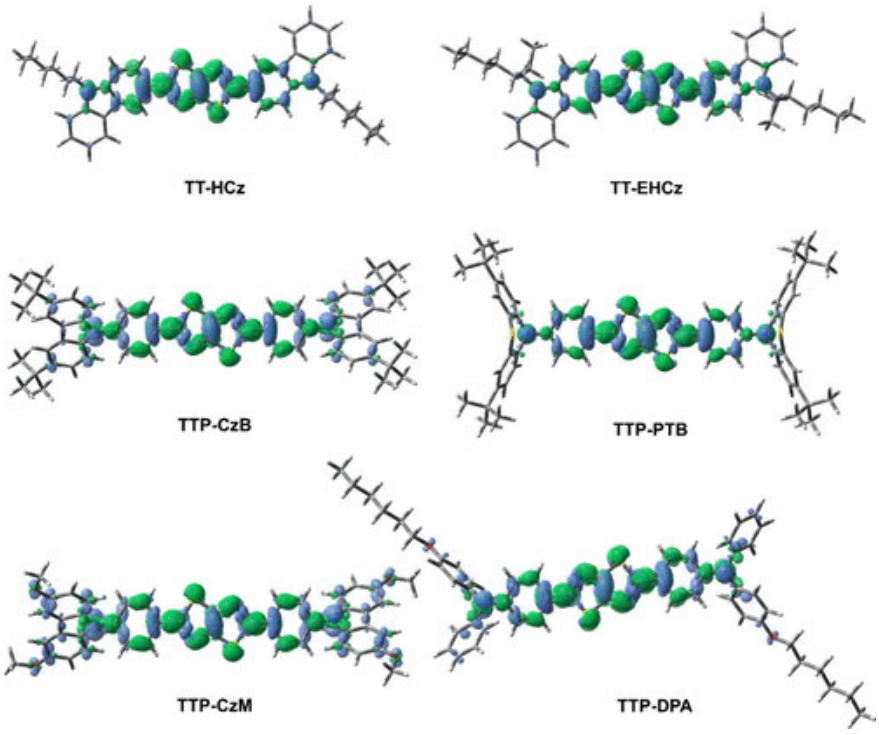
Successfully developed 'indoor solar cells' with conversion efficiency up to 37%

A group of researchers at Kaunas University, Lithuania has successfully developed indoor solar cells with impressive charging efficiency, up to 37%.

In the past, converting artificial light into energy was a challenge when compared to converting solar energy. To solve this problem, the research team has developed a new type of perovskite solar cell with high efficiency and the ability to draw energy from artificial light.

Current types of photovoltaic cells are almost impossible to operate indoors, where there are almost only artificial light sources with a smaller spectrum and less energy. In fact, there are many small devices such as smart sensors, digital clocks, and similar low-power devices that operate at night when solar power is not available. Therefore, the appearance of a new type of photovoltaic cell promises to bring many interesting application potentials. The new battery cell can power devices from minimal artificial light sources, which are almost always present at night.



New photovoltaic cells were developed to be efficient and capable of handling energy from a limited light spectrum. The material is made from organic semiconductors combined with perovskite creating a decent energy conversion rate. The light source used in the experiments conducted by the research team is a warm white LED

with a temperature of 3,000 Kelvin, corresponding to the normal temperature of a family living room. The spectrum is similar to that of natural light but without infrared radiation. In addition to a special perovskite layer, the photovoltaic cell uses thiazole molecules to conduct positive charge. Extensive experiments have yielded 37% efficiency using standard LED lighting. Meanwhile, the efficiency of photovoltaic cell technology is only 19% when using solar energy.

It is still unclear when this technology will be commercially applied. However, the potential is huge and promising.