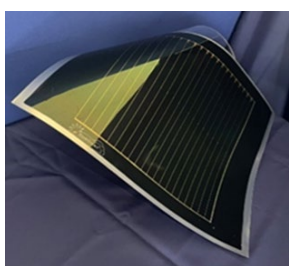
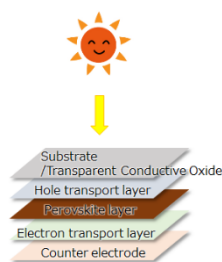


EneCoat Technologies Co., Ltd (hereinafter referred to as "EneCoat") and Toyota Motor Corporation (hereinafter referred to as "Toyota") have agreed to work together to develop and commercialize automotive perovskite solar cells, a highly anticipated next-generation technology, with the common goal of "contributing to the realization of carbon neutrality". Perovskite solar cells are next-generation solar cells that use a compound with a crystal structure called a perovskite structure and were invented in Japan in 2009 and have been under development towards the commercialization all over the world since then

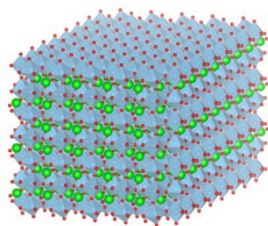
They are characterized by (1) high power generation efficiency of 20% or more, (2) thin, lightweight, and bendable, and (3) can be manufactured using a small number of processes. As a result, they can be manufactured using less energy and are expected to be low-cost. The high efficiency, thinness, and light weight make it suitable for automotive solar cells mounted on roofs and other structures.



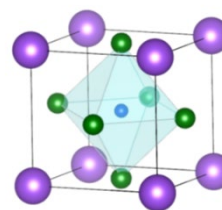
Appearance of Perovskite solar cell



Structure of Perovskite solar cell



Perovskite forms a film



Structure of Perovskite

EneCoat is a start-up company established in 2018 based on research results from Atsushi Wakamiya's laboratory at the Institute for Chemical Research, Kyoto University. It has material and deposition technologies for high-efficiency perovskite solar cells, and has successfully developed film-type perovskite solar cells with high output (module conversion efficiency of 19.4% as of April 2023). It is also participating in the Green Innovation Fund Project, one of the government's industrial policies aiming for carbon neutrality by 2050.

As part of various efforts to realize the "Toyota Environmental Challenge 2050," Toyota is aiming for self-sufficiency in carbon-free electricity from the perspective of energy conservation and energy diversification, and is promoting the practical application of in-vehicle solar power generation systems using crystalline silicon cells to further improve power generation efficiency and lower costs. The two companies are aiming to further improve power generation efficiency and lower costs.

The two companies will continue to promote the development of practical applications by integrating EneCoat's elemental technologies for perovskite solar cells and Toyota's in-vehicle technologies for solar panels, with the aim of promoting self-sufficiency in renewable energy and contributing to the achievement of carbon neutrality