Novel high-performance TiO_2/SnO_2 DSSC with SnSe counter electrode

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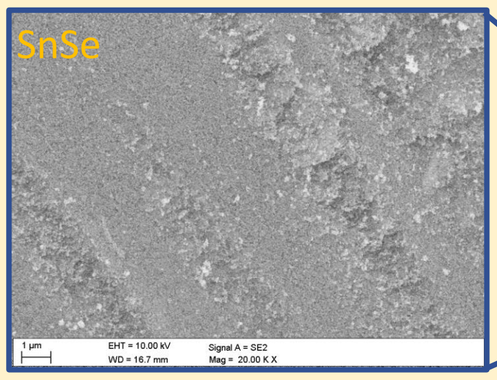
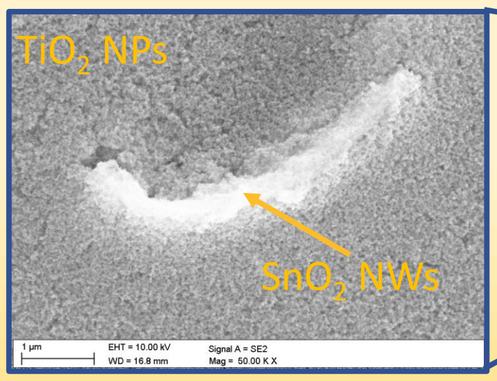
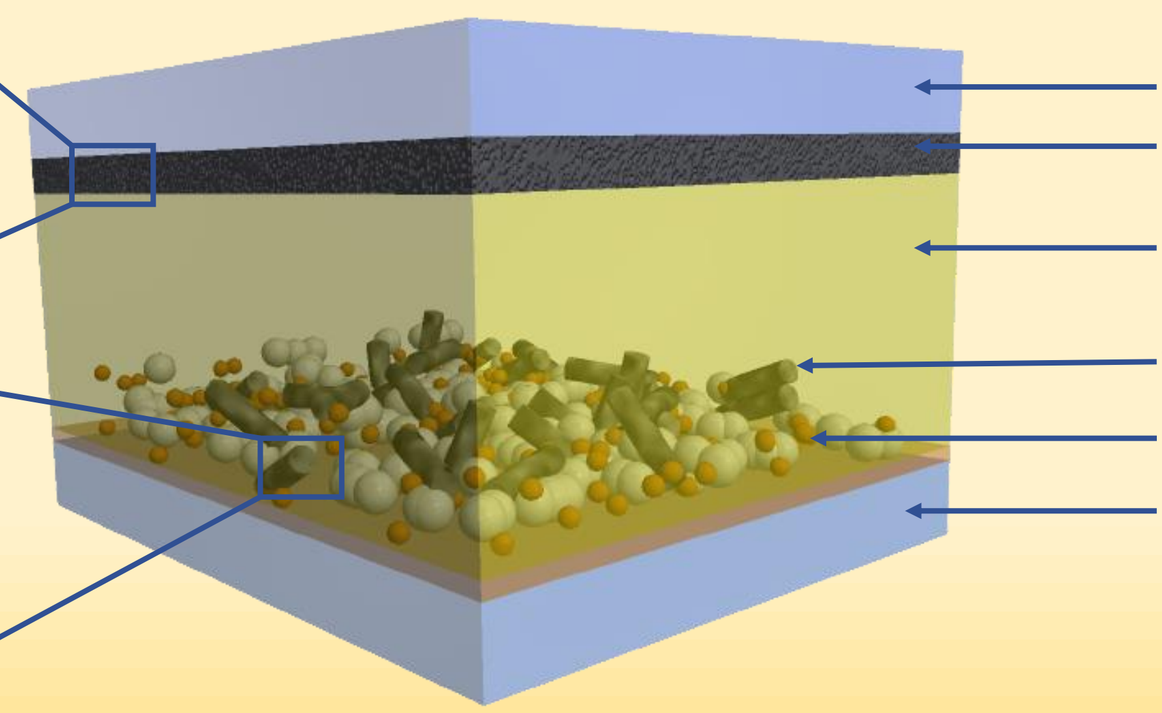
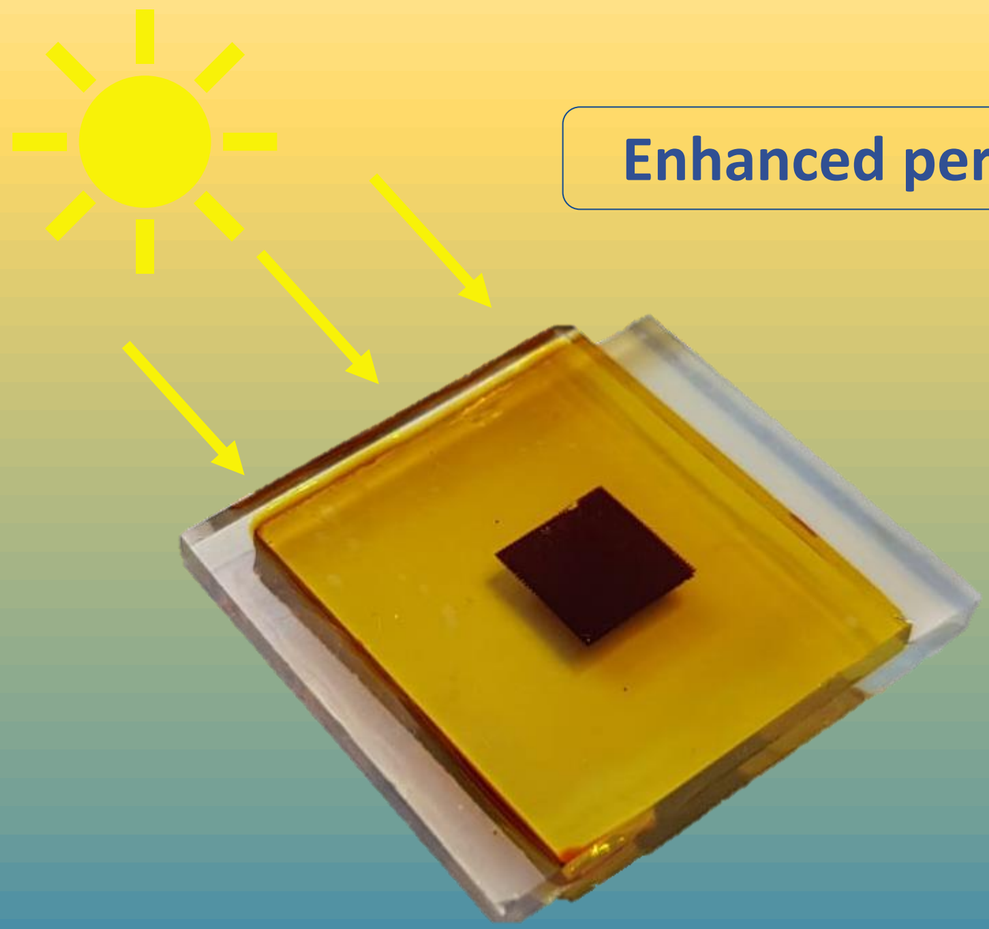
The extraordinary value of the presented invention includes both **the production technology and the contribution to the development process of energy generation systems from renewable sources**. The key issues taken into account in the design process of the presented photovoltaic structure were the intensification of the process of solar radiation absorption and the process of formation, separation, transport, and charge inside. Enhanced efficiency of DSSC was achieved by using a **TiO_2/SnO_2 hybrid photoanode** and an **SnSe thin film** as counter electrode.

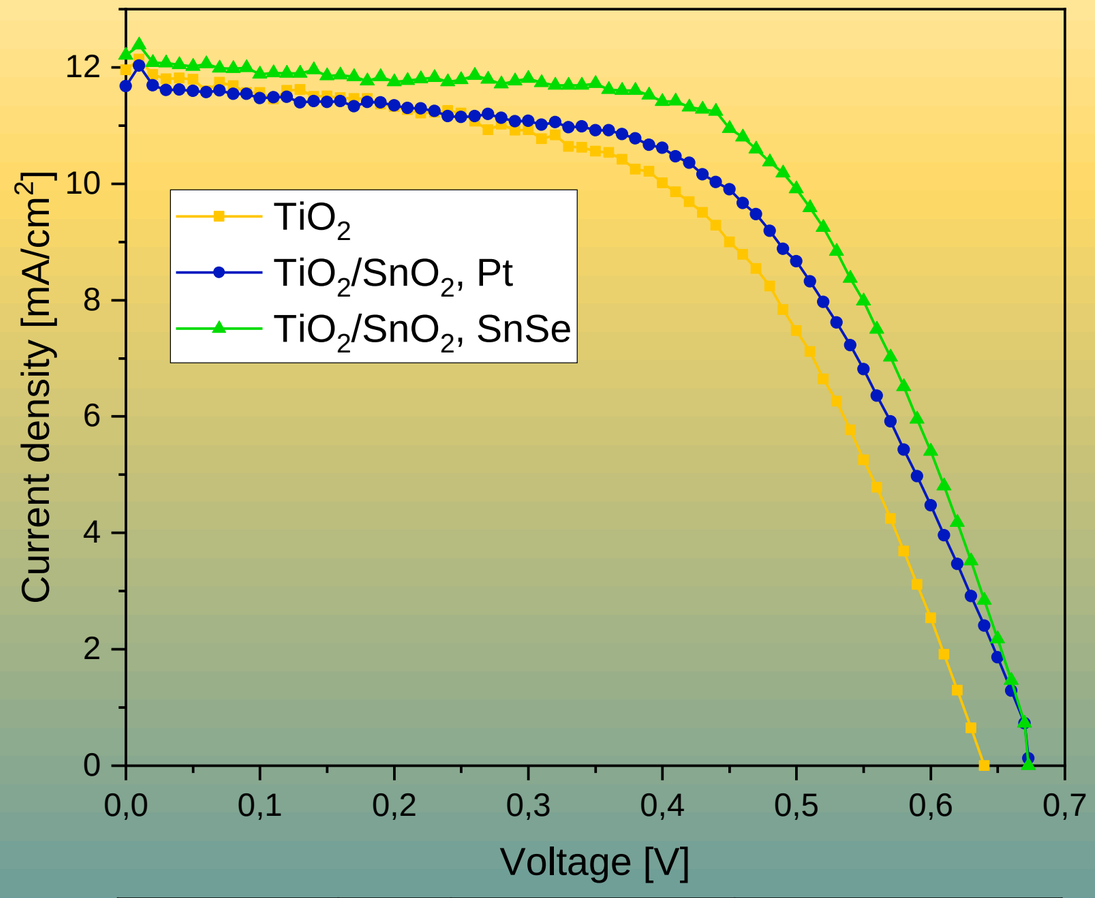






Enhanced performance





Parameter	TiO_2	TiO_2/SnO_2, Pt	TiO_2/SnO_2, SnSe
FF	0,5	0,5	0,6
H [%]	4,0	4,3	4,9

What's unique?

Green techniques

DSSC was manufactured using a combination of modern technologies, such as electrospinning, spin-coating, sol-gel, which enable to prepare high-quality 1D nanostructures and thin films.

Unconventional combination

The combination of electrospun SnO_2 nanowires with TiO_2 nanoparticles provide better electron mobility, thus higher performance of DSSC. Expensive Pt is replaced by cheaper SnSe counter electrode.

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