



NANOSTRUCTURED SIS SOLAR CELLS

**Friedrich Schiller University of Jena
Institute of Applied Physics**

Albert-Einstein-Straße 15
07745 Jena
Germany

Contact
Kevin Füchsel
Phone +49 3641 807-273
kevin.fuechsel@uni-jena.de

www.nanosis.uni-jena.de

Motivation and objective

The photovoltaic industry faces the challenge of providing a significant share of future energy demands. To achieve the high national and international goals, it is necessary to develop efficient cell concepts with low-cost production processes.

Nanostructured silicon

A requirement highly efficient solar cells have to meet is for the incident radiation to be efficiently coupled into the absorbing material. Nanostructured silicon surfaces are a well-known solution for the generation of broadband antireflection properties as well as direct photon management.

Nano-SIS solar cells

To implement a semiconductor-insulator-semiconductor system, a thin film of an insulating material is deposited on silicon, followed by overcoating with a transparent conductive oxide (TCO), for which indium tin oxide or aluminumdoped zinc oxide can be used.

The combination of nanostructured silicon interfaces and low-cost SIS systems creates an innovative solar cell concept with the potential of high efficiency at low production costs.



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