Plasmo-electric Converter (PECo)

Initiative: "Experiment!" (beendet)

Ausschreibung: Explorative Phase

Bewilligung: 27.11.2018

Laufzeit: 1 Jahre 6 Monate

Highly efficient, flexible, and scalable direct conversion of sun light into electric or chemical energy will be instrumental to master the climate crisis. A nano scaled device is proposed which is able to directly convert light into an electric potential without being limited by the band gap of a semi-conductor. The plasmo-electric converter exploits a thermodynamic effect in nanometer-sized metallic optical antennas excited next to their resonance. It generates an electric potential, which can then be used to drive currents or shift electrochemical potentials. The key building block are resonant optical antennas. Their geometry will determine the wavelength of light which will be optimally converted to electric energy. This will allow to harvest the infrared part of the sun spectrum that is usually lost in solar energy conversion because the photons cannot bridge the active material's bandgap. Besides demonstrating the effect in a functional device the experiments will also shed light on the fundamental mechanisms underlying the plasmo-electric effect and how to optimize its application.

Projektbeteiligte

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