Nanostructured material for photovoltaic application

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Colloidal nanocrystals are promising candidates for applications in photovoltaic devices. They combine a high absorption coefficient with a large surface to volume ratio, which enables for an efficient separation of the charges. One of the potential problems in these devices is a low efficiency of the transport from the active material to the electrodes.

We demonstrate two methods for anchoring the nanoparticles on a substrate. In both cases anisotropic semiconductor nanostructures are connected to the substrate through a metal domain, in one case by welding them onto gold patches, in the other case by using gold patches as seeds for their growth. Furthermore we demonstrate a setup for a spatially resolved investigation of the generation of the photocurrent, which might be useful for the design of active material.