Nano-photovoltaics

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The issue of high efficiency and low cost photovoltaic technology becomes one of the keys to renewable energy and sustainable environment. Nanotechnology comes in the right time to tackle this old issue with the hope to find the key technology for the future of mankind.

In this talk, I will report our approach to introduce nanotechnology into a low cost organic or organic-inorganic solar cell to enhance the photovoltaic efficiency. By better understanding and control of the interface between a p-n junction or a semiconductor-metal interface the energy harvesting efficiency can be substantially improved. Gold and silver nanoparticles were introduced into the organic solar cells to integrate plasmonic resonance with photovoltaics. Post treatments of the metal contact to the semiconductor were also performed to get better control of interfaces.

References