**Novel Plasmonic Nanomaterials for Near Infrared Light Energy Conversion**

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The structure of nanomaterial determines their individual properties and assembled structures they can form [1,2]. Highly efficient photoenergy conversion in heterostructured nanoparticles (HNPs) requires the formation of epitaxial heterointerfaces and band alignment engineering. One of the phases in HNPs should hold the light absorbing ability, such as narrow band gap semiconductor [3-7] and plasmonic material [8-10]. Special attention has been given to the HNPs with the combination of plasmonic semiconductor/semiconductor [8-10], where the near infrared plasmon-induced carrier transfer takes place to realize the long-lived charge separation and near infrared light energy conversion into electricity (see Fig. 1) [9] and chemical energy [8-10].

Fig. 1 Near infrared light energy conversion into electricity in ITO/Sn2O system [9]

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