

Supporting Information

Si/PEDOT Hybrid Core/Shell Nanowire Array as Photoelectrode for Photoelectrochemical water-splitting

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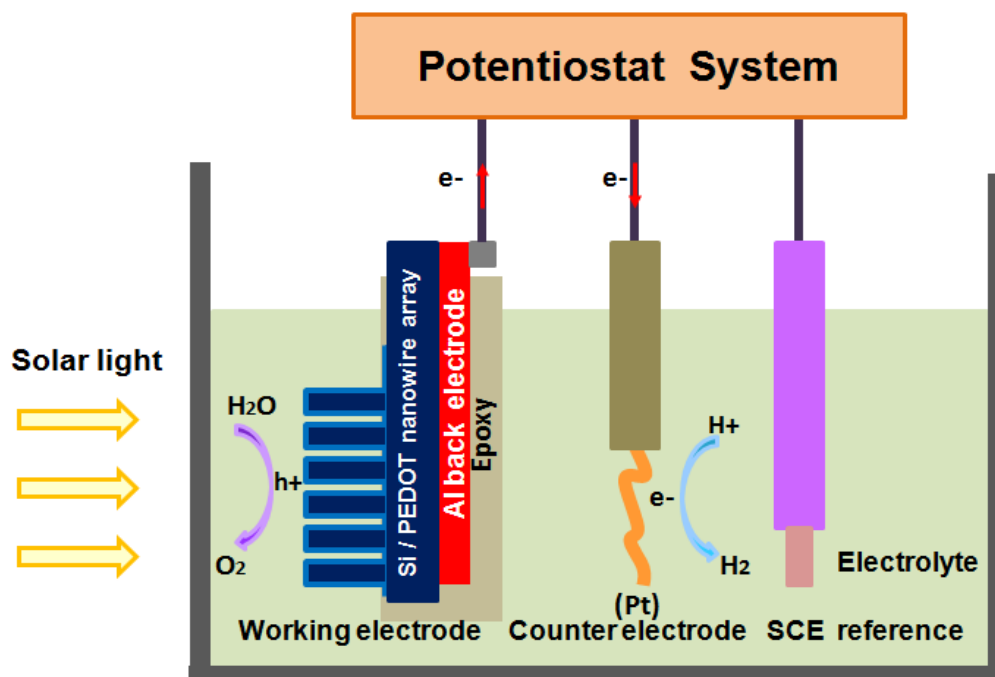
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Figure S1. The schematic setup of photoelectrochemical performance tests for the Si/PEDOT hybrid core/shell nanowire arrays as photoanode



The schematic setup of photoelectrochemical performance tests is shown in **Figure S1**. The Si/PEDOT hybrid core/shell nanowire array or the Si nanowire array, Pt foil, and saturated calomel electrode (SCE) are used as working electrodes, counter electrode, and reference electrode, respectively. The potentiostat system is by using an Autolab PGSTAT302N instrument. The Pt electrode is placed as close as possible to the nanowire-based working electrode in order to diminish the potential losses in the electrolyte. The nanowire-based working electrode is electrically connected to a Cu wire using Ag conductive adhesive and geometrically sealed by epoxy except with an area of 0.49 cm^2 exposed to the electrolyte.

Figure S2. (a), (b) and (c) SEM images of the Si nanowire array, the Si/PEDOT hybrid core/shell nanowire array, and the Si-APS/PEDOT hybrid core/shell nanowire array before photoelectrochemical test, respectively; (d), (e) and (f) the corresponding SEM images of the Si nanowire array, the Si/PEDOT hybrid core/shell nanowire array, and the Si-APS/PEDOT hybrid core/shell nanowire array after photoelectrochemical test for 3 min, 1 h, and 1 h, respectively.

