

Fluorescence based glucose biosensor using GOx immobilized ZnO nanowires

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The glucose biosensor based on glucose oxidase immobilized on ZnO nanowires were successfully synthesized. SEM and TEM were employed for investigating their structure and morphology. ZnO nanowires showed hexagonal shape and have wurtzite structure. The sensitivity of biosensor was measured by PL. This sensor showed a linear relationship of fluorescence intensity versus glucose concentration.

Keywords: glucose, nanowires, ZnO, biosensor, fluorescence

Enhanced Photochemical Response of TiO₂/CdSe Heterostructured Nanowires

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High-density single crystalline TiO₂ nanowires were successfully grown on Ti substrates by chemical vapor deposition at a low temperature of 700 °C and within a remarkably short time period of 5 min. They were combined with CdSe nanocrystals to form TiO₂/CdSe heterostructured nanowire by overcoating the nanowires with the CdSe-containing solution and subsequent annealing at 600 °C arrays. The TiO₂/CdSe nanowire arrays showed uniformly-distributed CdSe nanocrystals, and high crystallinity of rutile and wurtzite from the TiO₂ and the CdSe, respectively. Owing to the heterostructure of the TiO₂/CdSe, they demonstrate almost full visible-range light absorption, and thus enhanced photocatalytic activity by the charge separation via electron and hole transfer between the CdSe and the TiO₂.

Keywords: TiO₂, CdSe, nanowires, nanostructures