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Abstract

Tremella-like $ZnIn_2S_4$ (ZISt) and flower-like microsphere $ZnIn_2S_4$ (ZISm) were synthesized via a straightforward hydrothermal method. It was found that the ZISt was superior to ZISm for photoelectrochemical (PEC) sensing because of its large surface area and high photocatalytic activity. A composite of ZISt and graphene (GR) was prepared and used for the PEC sensing of dopamine (DA). Here DA acted as an electron donor to scavenge the hole and inhibit the charge recombination. The GR enhanced visible light absorption and accelerated electron transfer, amplifying the photocurrent signal. The strong chelating coordination interaction between DA and Zn(II) in ZISt guaranteed the selective adsorption of target analyte. Thus the resulting ZISt/GR photoelectrode showed sensitive and selective PEC response to DA. Under the optimized conditions, the linear response range was from 0.01 to 20 μM, and the