



RSC Advances

PAPER

Supporting Information

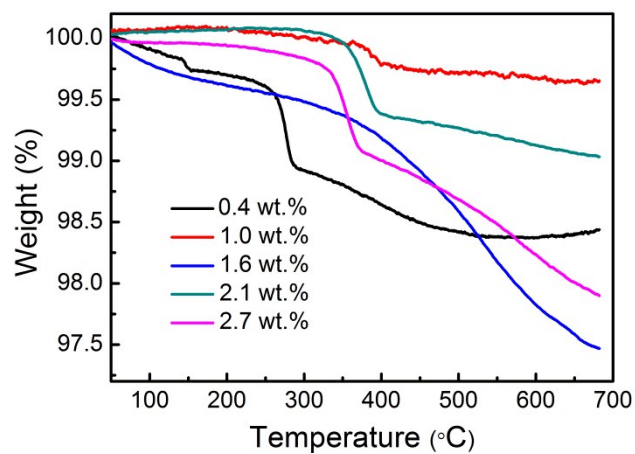
## Graphene nanodots decorated ultrathin P doped ZnO nanosheets for highly efficient photocatalyst

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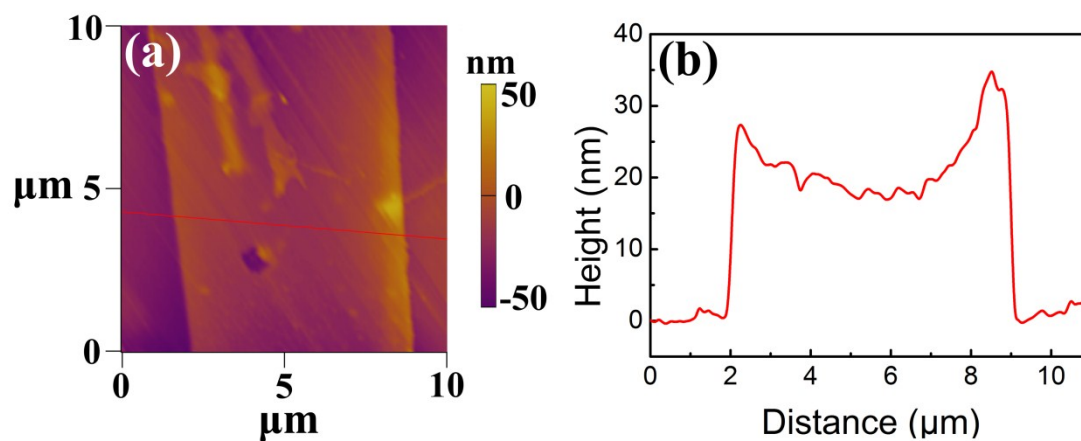
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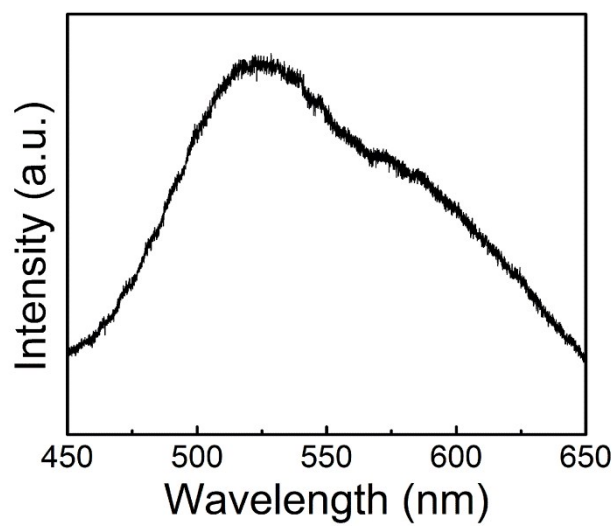
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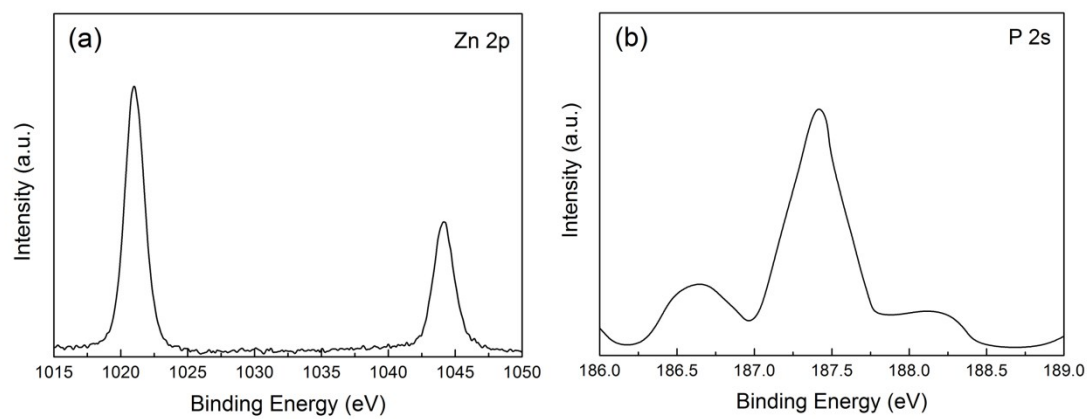
**Fig. S1** Thermogravimetric Analysis (Pyris 1, PerkinElmer) of ZnO:P/GNDs composites with different amounts of GNDs. Weight ratios of the five samples are about 0.4 wt.%, 1.0 wt.%, 1.6 wt.%, 2.1 wt.%, and 2.7 wt.%, respectively.



**Fig. S2** (a) AFM height topography and (b) cross-sectional profiles of as-grown ZnO:P nanosheets. The mean thickness of ZnO:P nanosheets is about 20-30 nm.



**Fig. S3** PL spectra of graphene nanodots. The emission peak is located at 526 nm.



**Fig. S4** XPS spectra of ZnO:P nanosheets, (a) the Zn 2p spectrum and (b) the P 2s spectrum.

**Table S1** Apparent rate constants  $k$  calculated according to the UV-VIS spectra for degrading RhB of ZnO:P/GNDs with different amounts of GNDs.

GNDs ratio	0	0.4 wt. %	1.0 wt. %	1.6 wt. %	2.1 wt. %	2.7 wt. %
$k$ (min <sup>-1</sup> )	0.131	0.210	0.254	0.442	0.287	0.266