Electronic Supplementary Material (ESI) for RSC Advances.

Fluorescence of ZnO/Carbon Mixture and Their Application in Acid Rain Detection

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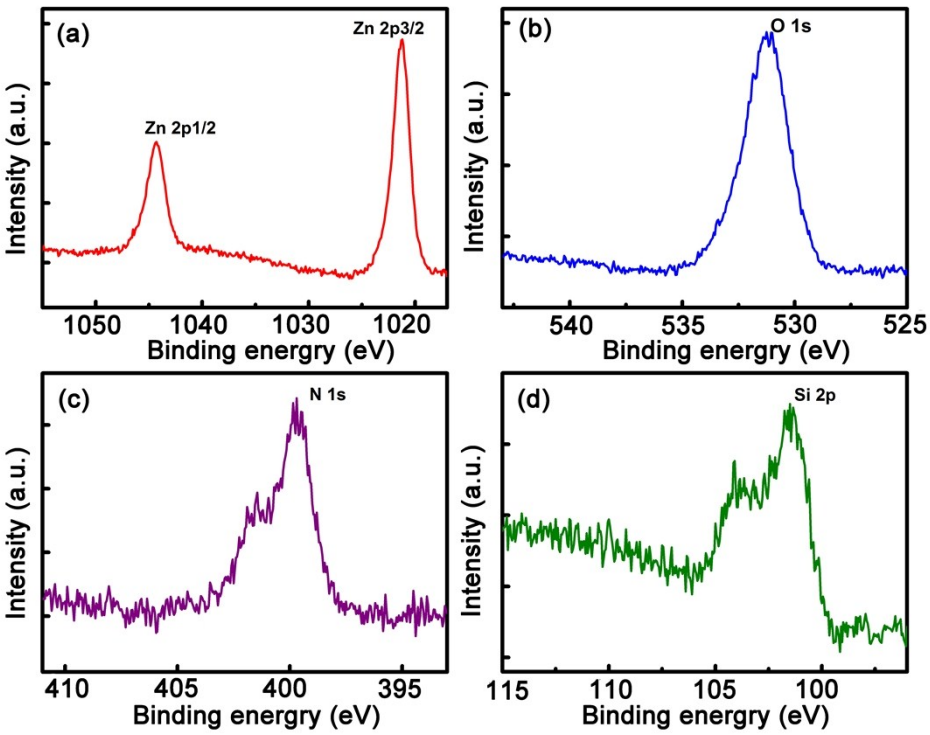

Figure S1. Zn 2p (a), O 1s (b), N 1s (c) and Si (2p) XPS patterns of ZnO and carbon NPs.

Element	Binding energy (eV)	Percent (%)
C	282.84	54.05
O	529.52	25.47
N	398.01	5.23
Zn	1019.58	7.03
Si	99.72	8.22

Table S1. The elemental contents of the ZnO and carbon mixture.

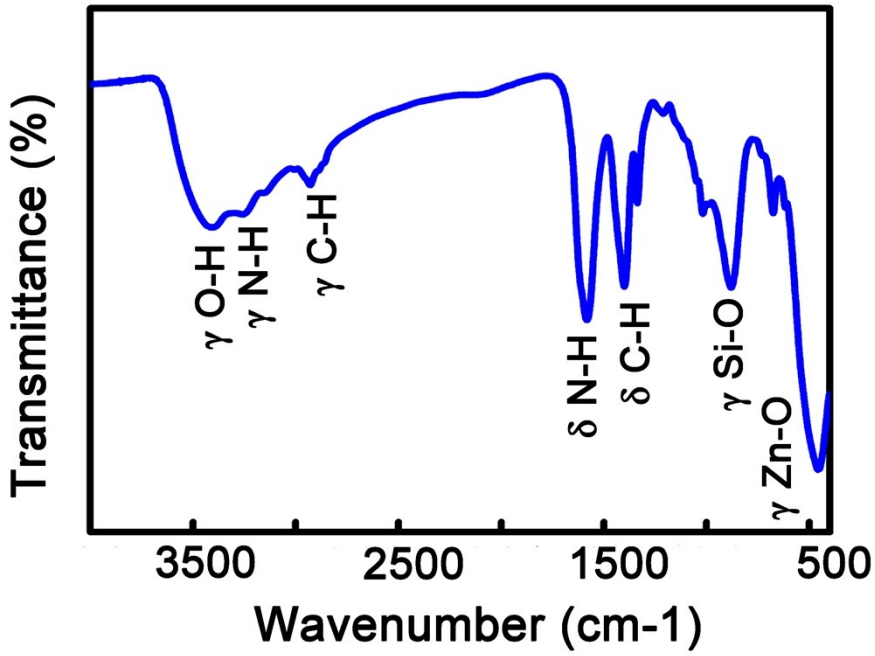

Figure S2. The FTIR spectrum of the ZnO NPs.

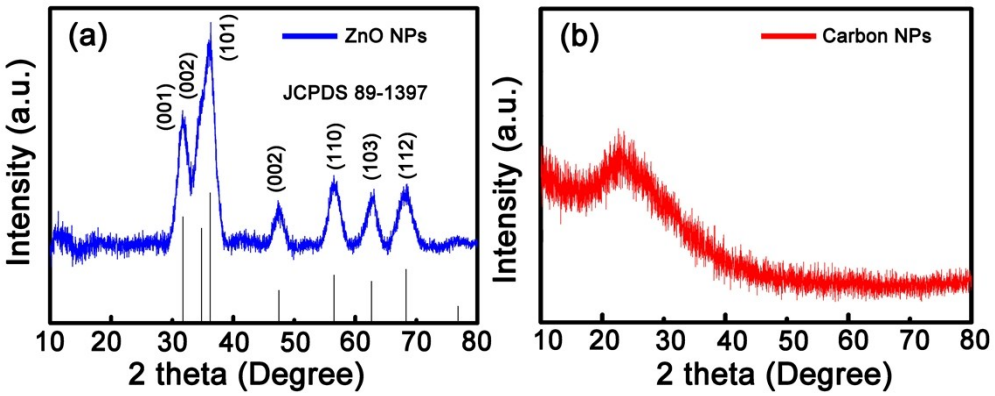

Figure S3. XRD patterns of the ZnO NPs (a) and carbon NPs (b).

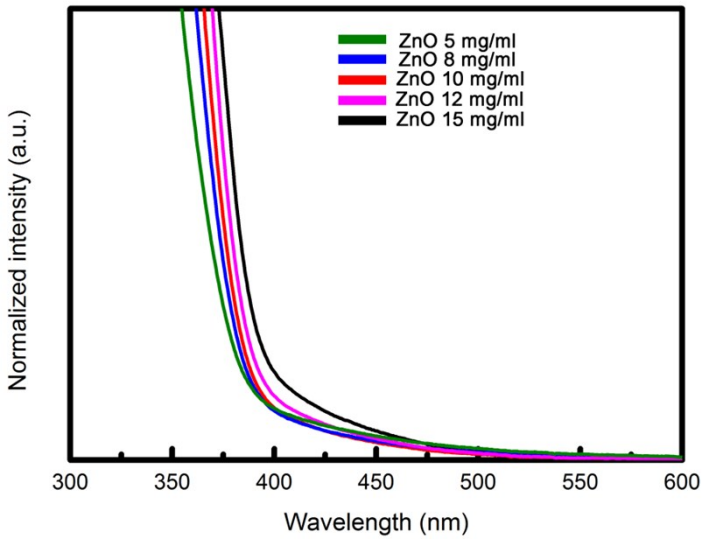

Figure S4. Absorption spectra of the ZnO NP solution with concentrations ranging from 5 to 15mg/ml.

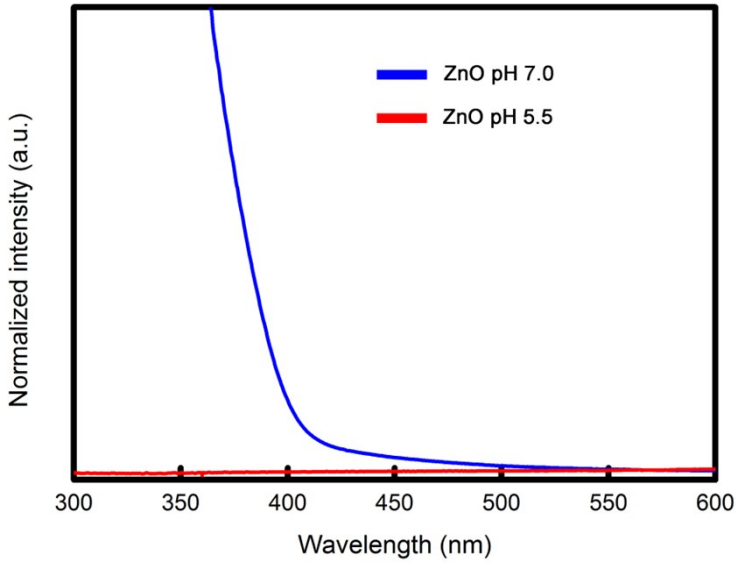

Figure S5. The absorption spectra of the ZnO NP solution with pH values of 7.0 and 5.5, respectively.

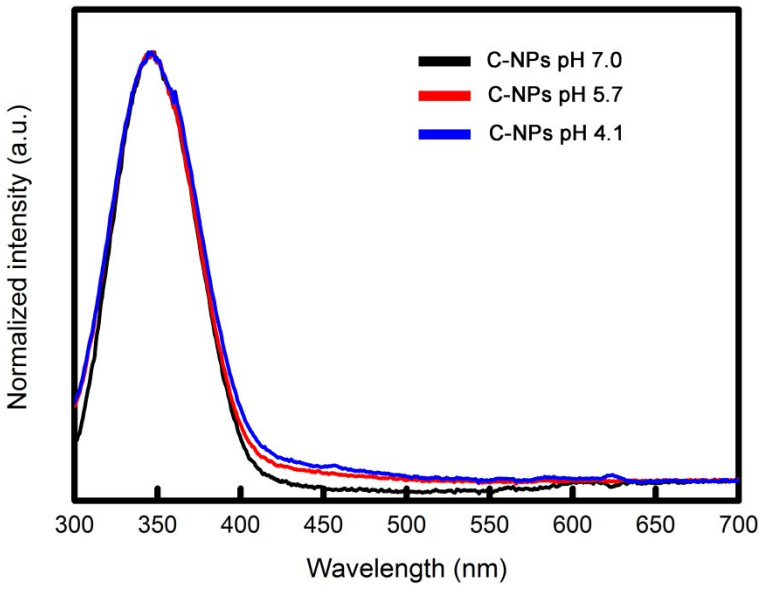

Figure S6. The absorption spectra of the carbon NP solution under different pH values.

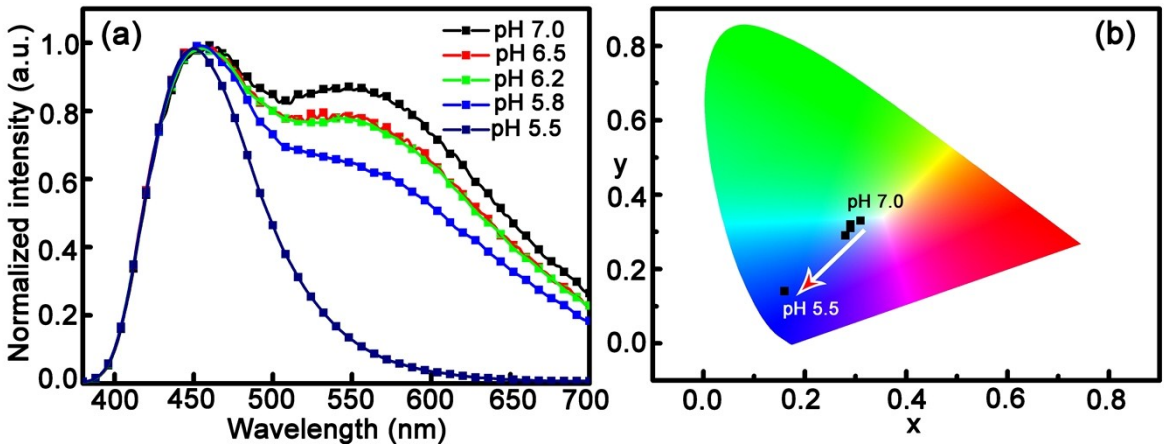

Figure S7. (a) The fluorescence spectra of the ZnO and carbon NP mixture under the illumination of 365 nm line of xenon lamp. (b) The corresponding color coordinates of the ZnO and carbon NP mixture under different pH values.