1 **Supporting information**

2 **Fe-N-C single-atom nanozymes with peroxidase-like activity for the**

3 **detection of alkaline phosphatase**

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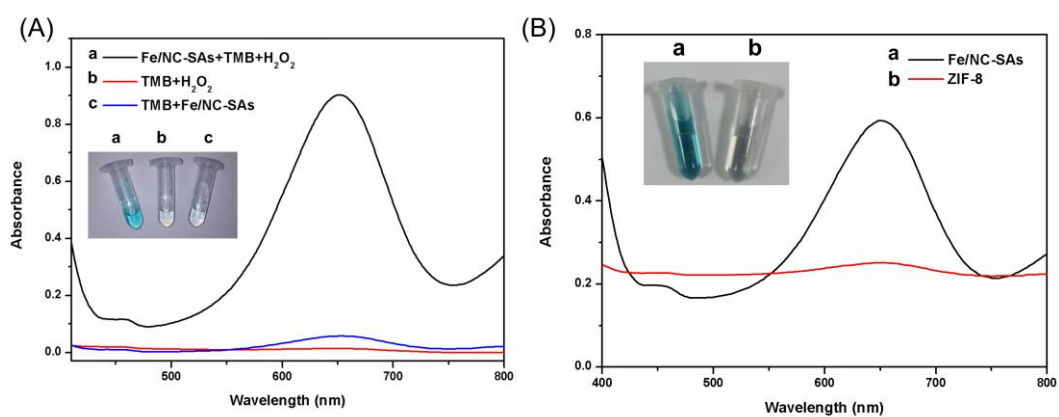5 [a] *College of Chemistry, Jilin University, Changchun, 130012, PR China*

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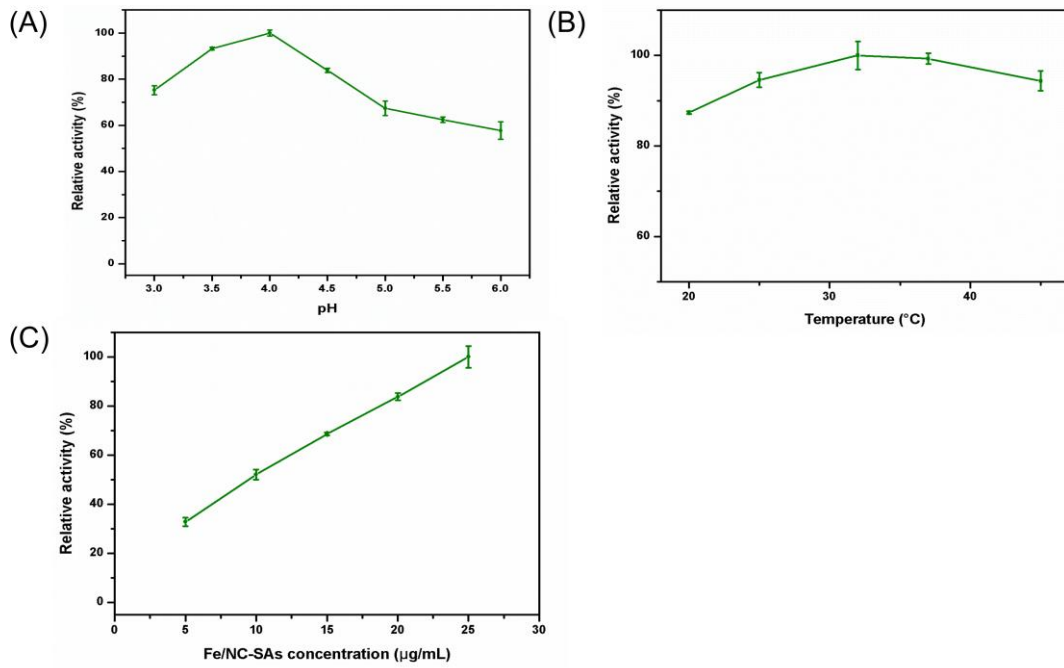20 *Tel.: +86-431-85168352*

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Fig. S1. UV–vis absorption spectra of peroxidase-like activity of Fe/NC-SAs system with substrates of TMB. Inset was the corresponding photos under visible light.
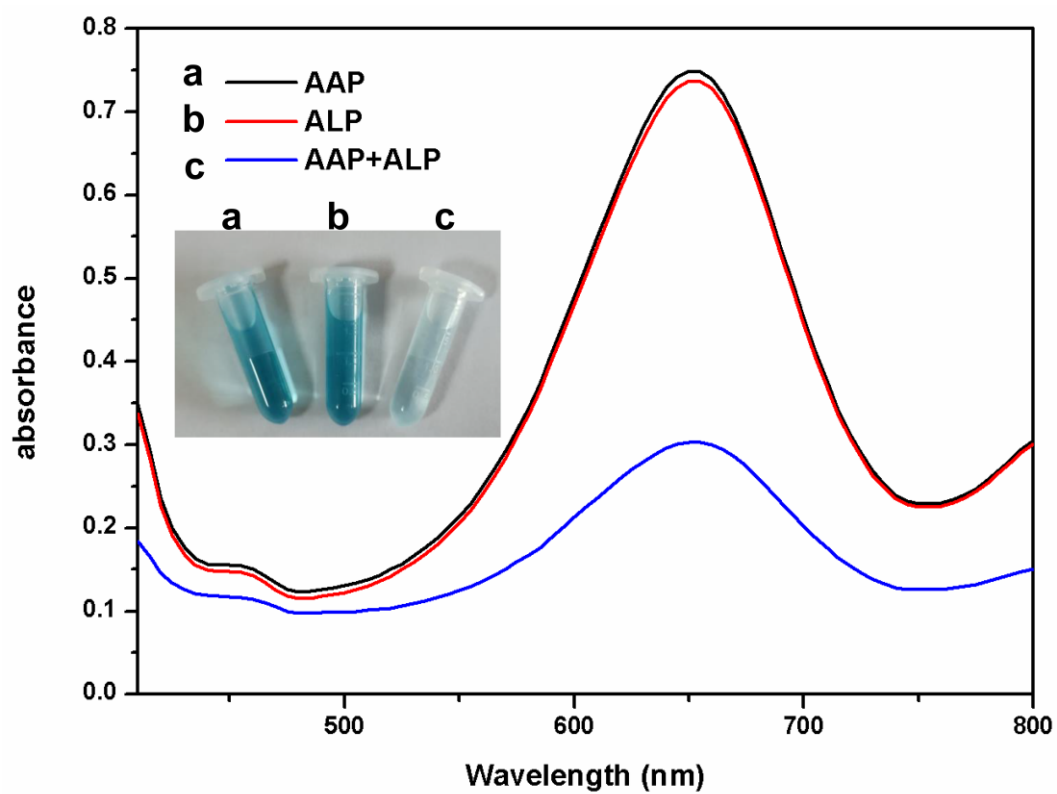
Fig. S2. Influence of pH (A), reaction temperature (B), concentrations of Fe/NC-SAs(C) on the
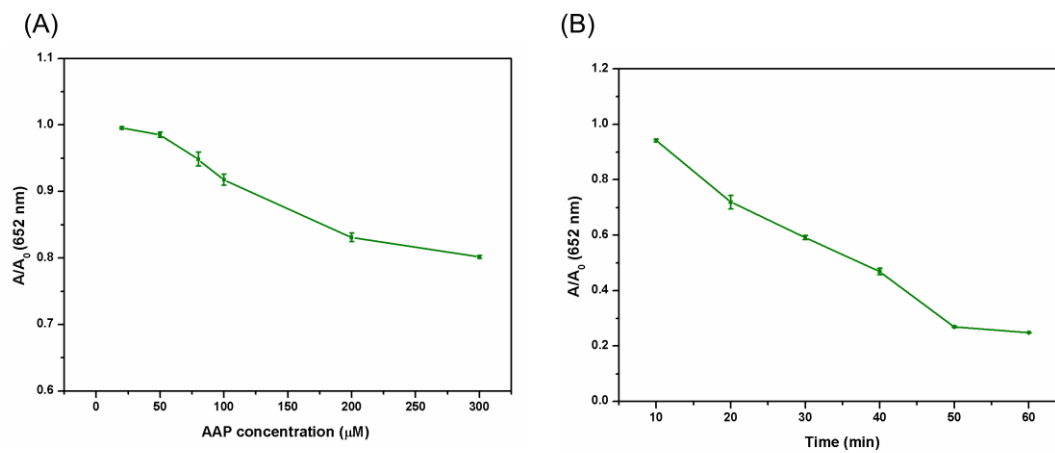
activity of Fe/NC-As in TMB+H_2O_2/Fe/NC-As system.

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Fig. S3. UV–vis absorption spectra of ALP detection system based on Fe/NC-SAs. Inset was the
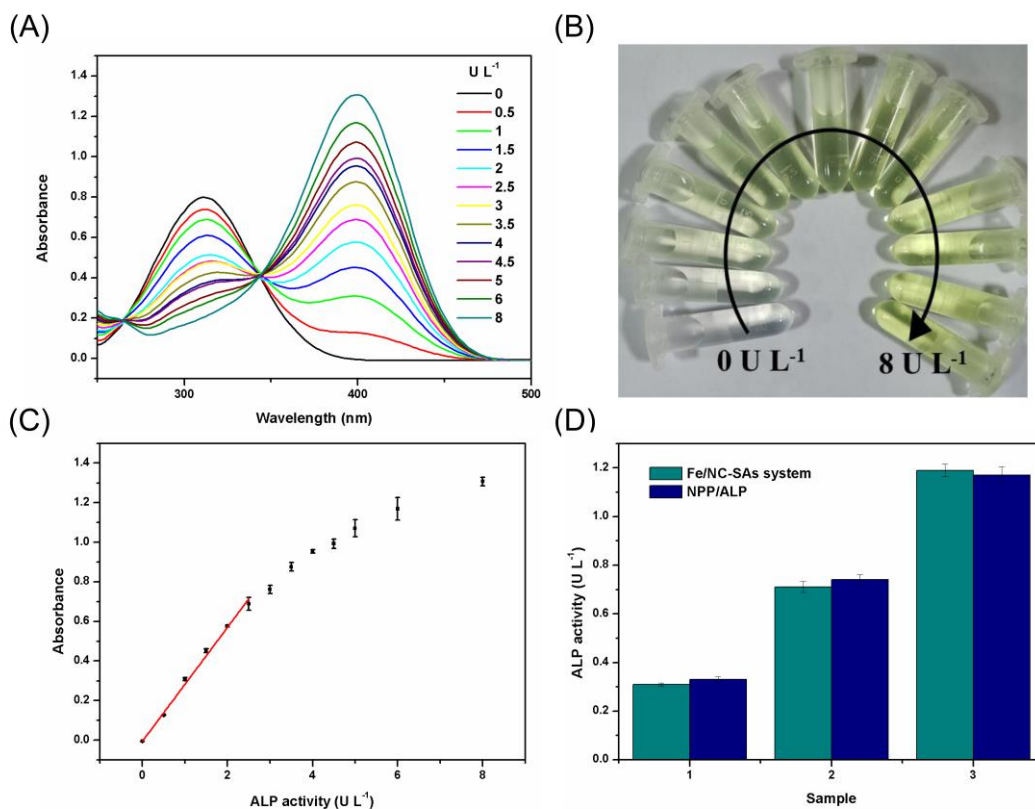
corresponding photos under visible light.

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2   **Fig. S4**. Influence of concentrations ofAAP (A), reaction time (B) on the relative absorbance

3   (A/A_0) of ALP detection system based on Fe/NC-SAs. A was the sample absorbance and A_0 were

4   the absorbance at zero concentration (A) and initial time (B).

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Fig. S5. (A) UV–vis absorption spectra of pNPP with varied amounts of ALP addition. The concentration PNPP was 1 mM and reaction time was 50 minutes. (B) Photographs of the pNPP/ALP enzymatic reaction solutions with various concentrations of ALP taken under the visible light. (C) Plots of the absorbance of the assay based on pNPP/ALP versus ALP activity at 405 nm. (D) The measured results of pNPP/ALP were compared with that obtained by Fe/NC-SAs system.

1 **Table S1** Comparison of several previously reported ALP sensors

Biosensing materials	Analytical method	Linear range (U L^{-1})	LOD (U L^{-1})	Reference
$Cu(BCDS)_2^{2-}$	Fluorescent	0-220	0.27	[1]
Carbon quantum dots	Fluorescent	16.7-782.6	1.1	[2]
PB NCs	Colorimetry	0.6-6	0.23	[3]
Ce(IV) ions	Colorimetry	50-250	2.3	[4]
$MnFe_2O_4$	Colorimetry	0.6-55	0.27	[5]
FeCo NPs	Colorimetry	0.6-10	0.49	[6]
Fe/NC-SAs	Colorimetry	0.1-1.5	0.05	This work

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