Electronic Supplementary Information (ESI)

Ultrasensitive Detection of Orthophosphate Ions with Reduced Graphene Oxide/Ferritin Field-effect Transistor Sensors

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Electronic Supplementary Information (ESI) available: sensing response of another sensor without probe linker; control sensing test of the sensor without probe; pH impact study; and sensor recycling study.
**Figure S1.** Dynamic sensing responses of another typical sensor without probe linker.

*without ferritin probe*

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**Figure S2.** Control sensing test of a sensor without ferritin probe. The sensor without probe shows negligible responses to $\text{HPO}_4^{2-}$.

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**Test with pH from 7 to 9**

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**Figure S3.** Sensor responses to control water solutions with a pH from 7 to 9. The sensor has no responses to pH in this range, which indicates that the sensor is stable for $\text{HPO}_4^{2-}$ sensing in a weak basic condition.
Figure S4. (a-e) Recycling tests of the rGO/ferritin sensor. The sensor was tested for five times with a probe recovery treatment in an NaOH and NaCl solution between each test. (f) Sensitivity summary of the sensor to 250 nM and 2.5 µM HPO$_4^{2-}$ in each test.