Supporting Information
A ratiometric fluorescence recognition of guanosine triphosphate on the basis of Zn (II) complex of 1, 4-bis (imidazol-1-ylmethyl) benzene

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Figure S1 The $^1$H NMR spectrum of bix (Insert is the chemical structure of bix).

Figure S2 The ESI-MS spectrum of bix.

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Figure S3 FT-IR spectra for bix-Zn(II) complex.

Figure S4 SEM image of bix-Zn(II).

Figure S5 Concentration-dependent $F_{341\ nm} / F_{289\ nm}$ upon addition of guanosine and GTP into bix-Zn(II). $c_{\text{bix-Zn(II)}}$, 0.5 mmol/L; $c_{\text{anions}}$ in turn, 18, 30, 45, 60, 90 and 120 $\mu$mol/L; 20 mM HEPES buffer, pH 7.4. $\lambda_{\text{ex}}$, 230 nm.
Figure S6 Unique fluorescence change of bix-Zn(II) induced by dGTP. \( c_{\text{bix-Zn(II)}} \), 0.5 mmol/L; \( c_{\text{anions}} \), 120 \( \mu \)mol/L; 20 mM HEPES buffer, pH 7.4. \( \lambda_{\text{ex}} \), 230 nm.

Figure S7 Fluorescence spectra of bix in the absence and presence of various nucleotides. \( c_{\text{bix}} \), 0.5 mmol/L; \( c_{\text{anions}} \), 120 \( \mu \)mol/L; 20 mM HEPES buffer, pH 7.4. \( \lambda_{\text{ex}} \), 230 nm.
Fig. S8 Unique fluorescence recovery and enhancement of GTP induced by Zn(II). 
$c_{\text{anions}}$, 60 µmol/L; $c_{\text{Zn(II)}}$, 60 µmol/L; 20 mmol/L HEPES buffer, pH 7.4. $\lambda_{\text{ex}}$, 230 nm.

![Fluorescence spectrum](image)

Figure S9 Ratiometric fluorescence response of bix-Zn(II) induced by guanosine at pH 9.15. $c_{\text{bix-Zn(II)}}$, 0.5 mmol/L; $c_{\text{guanosine}}$, 0, 15, 30, 45, 60, 75 µmol/L (from 1 to 6). $\lambda_{\text{ex}}$, 230 nm.

![Fluorescence response](image)

Figure S10 Unique fluorescence change of bix-Zn(II) with dsDNA containing guanine base (dsDNA1 was hybridized by ssDNA of A₆ with T₆, and dsDNA2 was hybridized by ssDNA of G₆ with C₆). $c_{\text{bix-Zn(II)}}$, 0.5 mmol/L. $\lambda_{\text{ex}}$, 230 nm.

![Fluorescence intensity vs. wavelength](image)