Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Facile synthesis of nanocomposite based on graphene and ZnAl layered double hydroxides as a portable shelf of luminescent sensor for DNA detection

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Measurements The absorption and emission spectra were collected using a Shimadzu 1750 UV-visible spectrometer and a RF-5301 fluorescence spectrometer (Japan), respectively. All experiments were performed in compliance with the relevant laws and institutional guidelines, and were approved by Northwest A&F University.

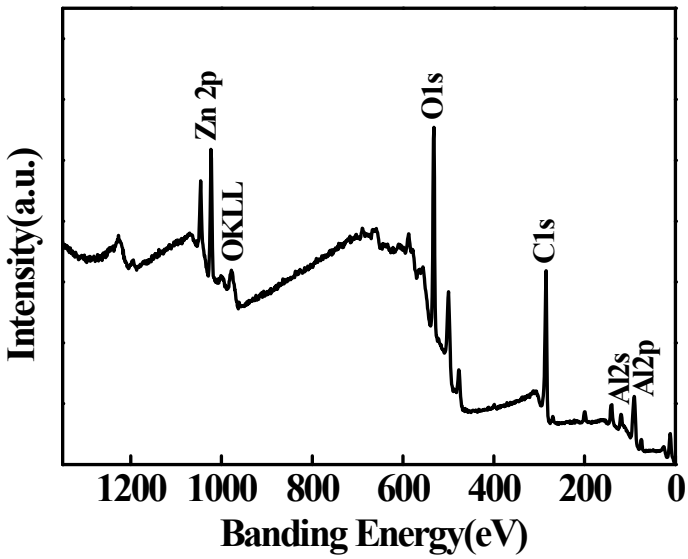

Figure S1. XPS wide scan spectrum of RGO/ZnAl-LDH composite.

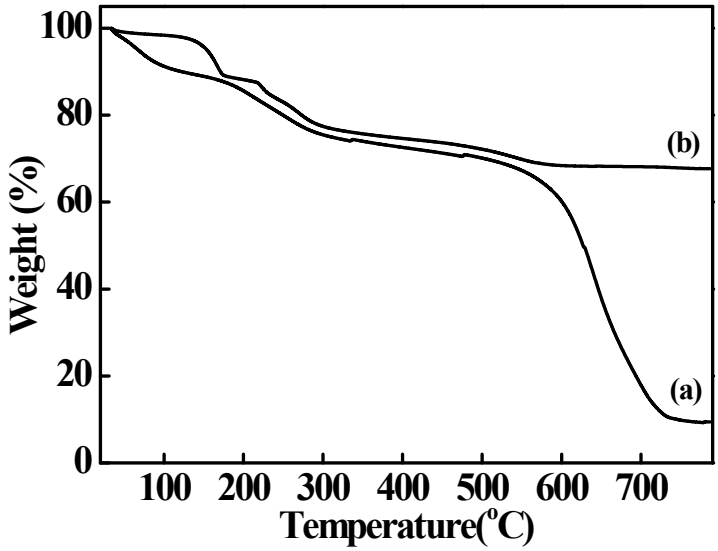

Figure S2. TGA curves of (a) RGO and (b) RGO/ZnAl-LDH composite.

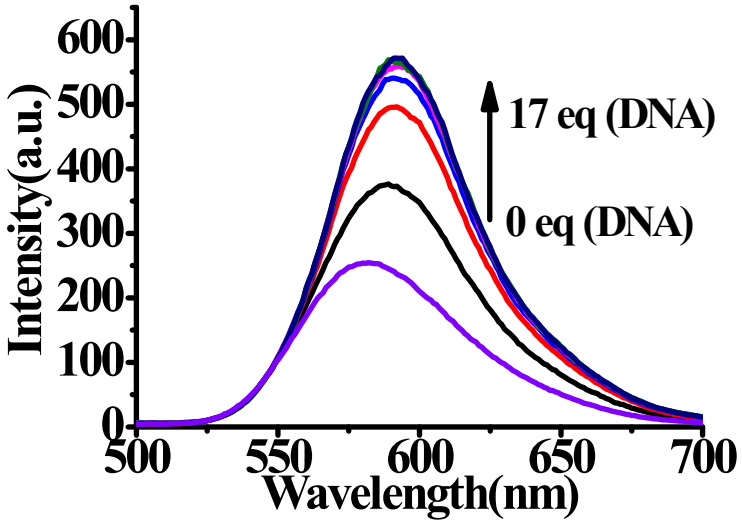

Figure S3. Luminescence spectra of $Ru(phen)_3Cl_2$ (0.49 μM) in aqueous solution

upon addition of different concentration of CT DNA, Ex=464 nm.

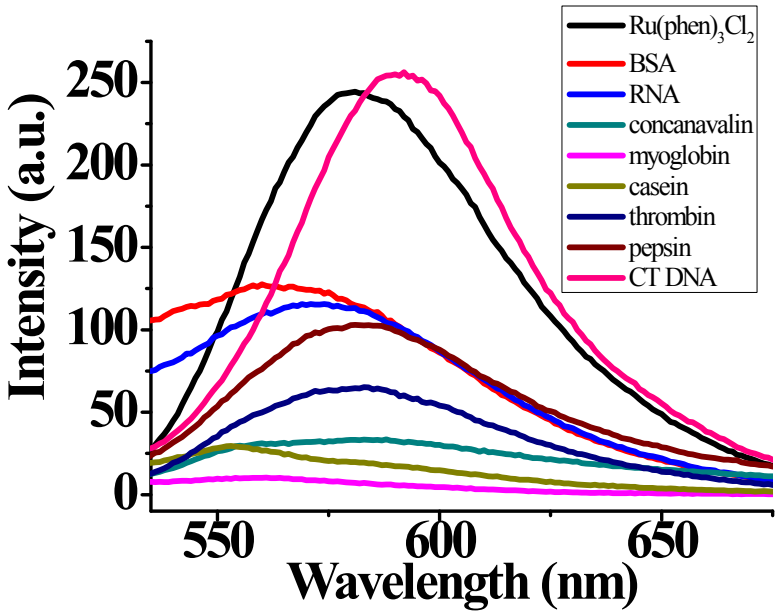

Figure S4. Luminescence response of $Ru(phen)_3Cl_2$ (0.49 μM) after addition excess of various proteins in the presence of RGO/ZnAl-LDH composite (0.83 mg/mL), Ex=464 nm.

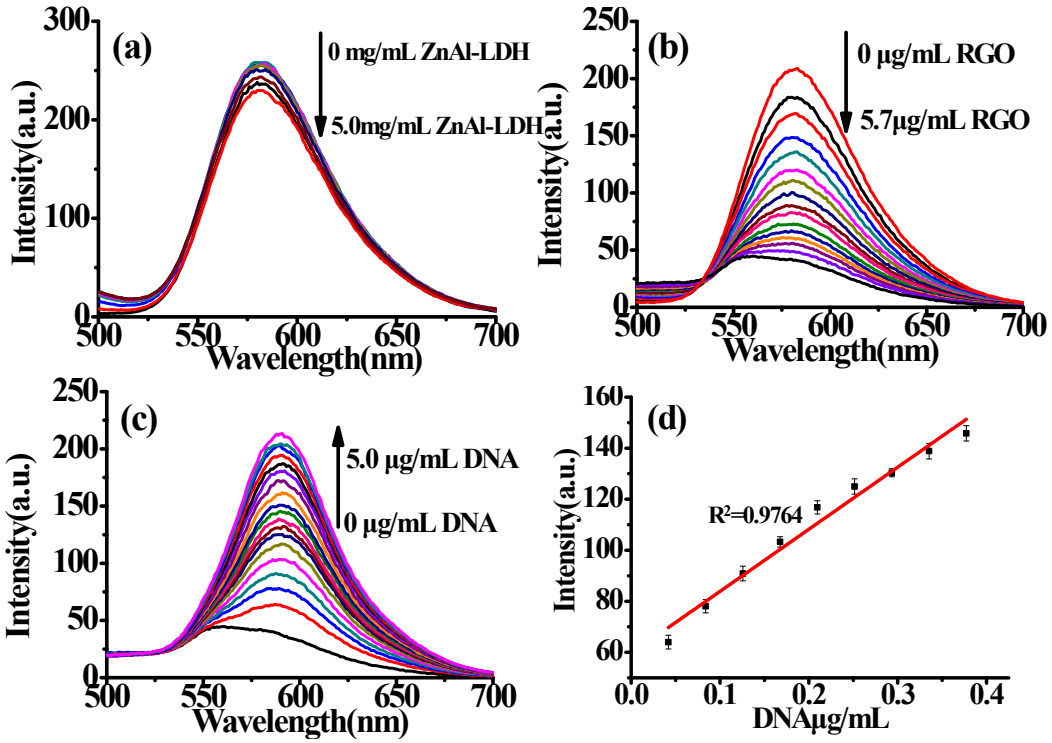

Figure S5. Luminescence spectra of $Ru(phen)_3Cl_2$ (0.49 μM) in aqueous solution (a) upon addition of different concentration of pure ZnAl-LDH; (b) upon addition of different concentration of RGO; (c) upon addition of different concentration of DNA in the presence of 5.7 μg/mL RGO; (d) Luminescence signaling change at 590 nm plotted as the function of DNA concentation, Ex=464 nm.

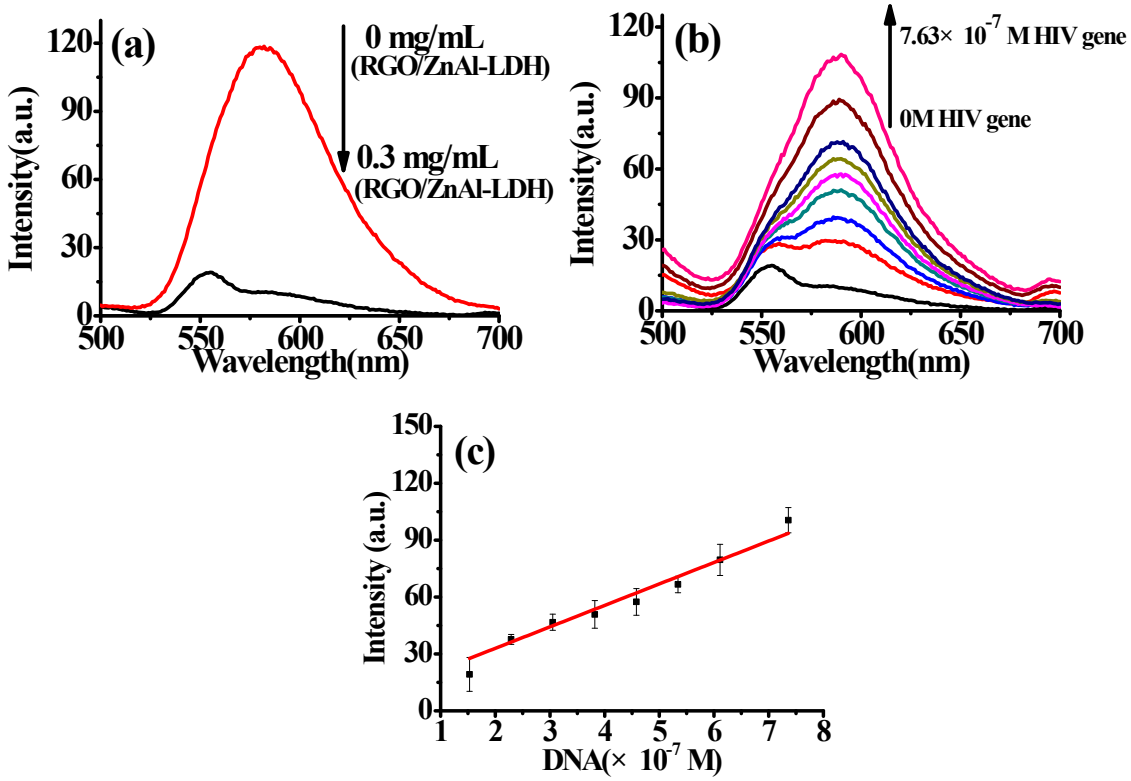

Fig. S6 Luminescence spectra of $Ru(phen)_3Cl_2$ (a) upon addition of 0.3 mg/mL RGO/ZnAl-LDH composite; (b) upon analyzing different concentration of HIV target gene in the presence of 0.30 mg/mL RGO/ZnAl-LDH composite; (c) Luminescence signaling change at 591 nm plotted as the function of HIV target gene concentation, Ex=464 nm.