Supplementary Material
for the manuscript:
Dual-signal ratiometric electrochemiluminescence assay for detecting the activity of human methyltransferase

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S1.1 Synthesis of MPA-CdS:Eu NCs

A 112.5 μL sample of 0.08 M $Eu(NO_3)_3$ solution was added to 30 mL of $Cd(NO_3)_2$ aqueous solution (0.018 M) with stirring. Afterwards, 80 μL of the MPA solution was dropped into the above solution, and the pH was adjusted to 10, followed by the injection of 30 mL of freshly-prepared Na_2S solution (0.1 M). The reaction solution instantly turned orange-yellow. The reaction was continued for 3 h at 70 °C with stirring. The final product was centrifuged and washed thoroughly with absolute ethanol at least three times, followed by washing with water to remove any remaining Eu^{3+} and other ions. Then, the resulting precipitate was ultrasonically dispersed into water to obtain a uniform MPA-CdS:Eu NCs suspension, which was stable for more than one month when stored in refrigerator at 4 °C prior to use. The average size of synthesized MPA-CdS:Eu NCs is about 4-5 nm, as indicated by the TEM image of MPA-CdS:Eu NCs (Figure S1).

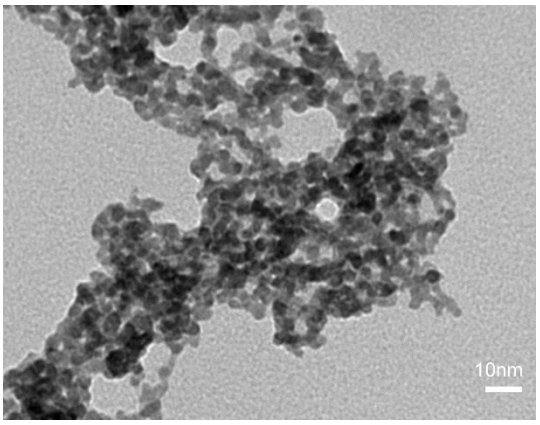

Fig.S1 The TEM image of MPA-CdS:Eu NCs.

S1.2 Synthesis of Au NCs

A 20 mL aliquot of the $HAuCl_4$ + trisodium citrate aqueous solution (2.5×10^{-4} M for each) was prepared in a conical flask, accompanied with the addition of 0.6 mL of the ice-cold and freshly-prepared 0.1 M $NaBH_4$ solution under stirring. The solution turned pink immediately, indicating the formation of the Au NPs, and then stored in a refrigerator at 4 °C before use. The TEM image of Figure S2 shows that the average size of synthesized Au NPs is about 4 nm.

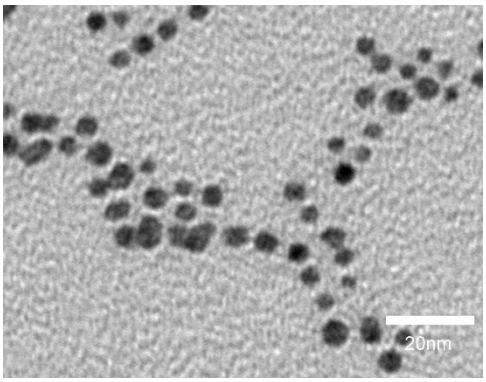

Fig. S2 TEM image of the synthesized Au NCs.

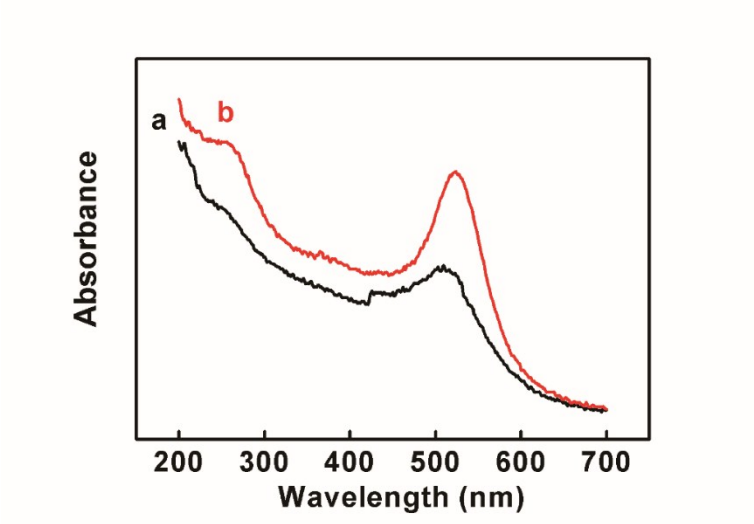

Fig. S3 UV-vis absorption of (a)Au NPs and (b) DNA S2-Au NPs complexes.

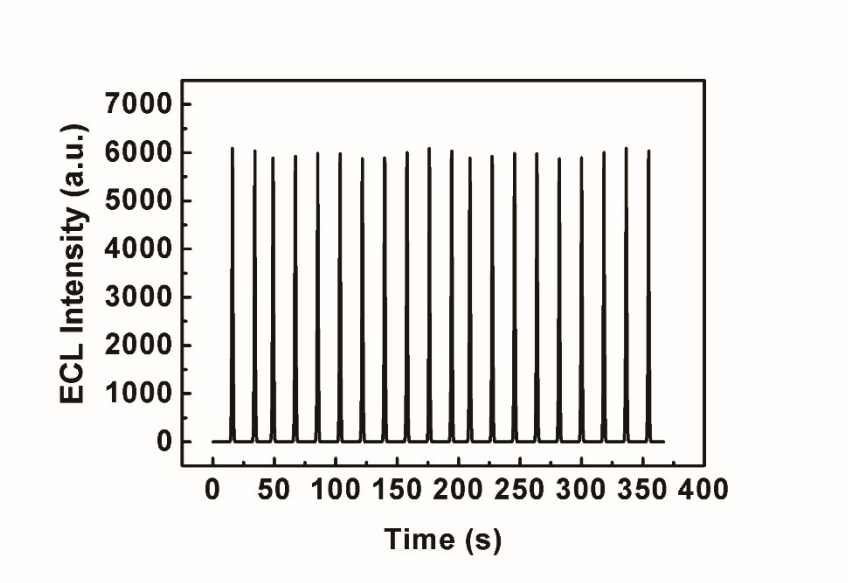

Fig. S4 ECL behaviors of MPA-CdS:Eu under continuous cyclic potential scan for 20 cycles.

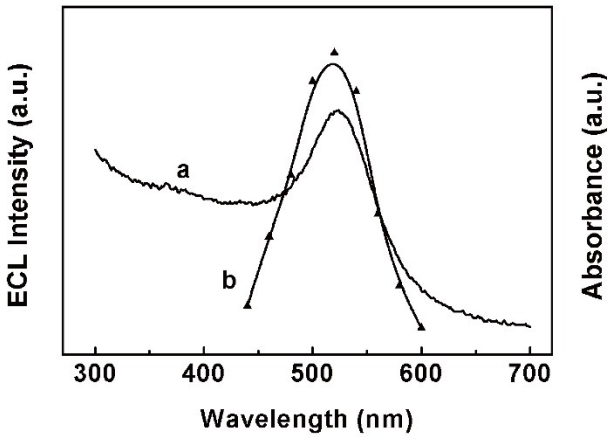

Fig. S5 (a) the UV-vis absorption spectrum of DNA S2-Au NPs complexes and (b) the ECL spectrum of the MPA-CdS:Eu modified GCE