

Supplementary Material for Journal of Materials Chemistry

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Supplementary data

Salt-Controlled Assembly of Stacked-Graphene for Capturing Fluorescence and Its Application in Chemical Genotoxicity Screening

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Page 1: Table S1, Fig. S1 and Fig. S2

Page 2: Fig. S3

Page 3: Fig. S4 and Fig. S5

Page 4: Fig. S6, Fig. S7 and Fig. S8

Page 5: Fig. S9 and Fig. S10

Table S1 Oligonucleotides sequence employed in our work

Oligonucleotide	Sequence
ssDNA	5'-Cy3-AATGTTTCGATGCTGACGGTCCATATGGACCGTCAA-3'
dsDNA	5'-AATGTTTCGATGCTGACGGTCCATATGGACCGTCAA-3' 5'-TTGACGGTCCATATGGACCGTCAGCATCGAACATT-3'
tsDNA	5'-GGTAAGCCTGGGCCTCTTTCTTTTAAAGAAAGAAC-3' 5'-TTAGCTTCTTTCTAATACGGCTTACC-3'

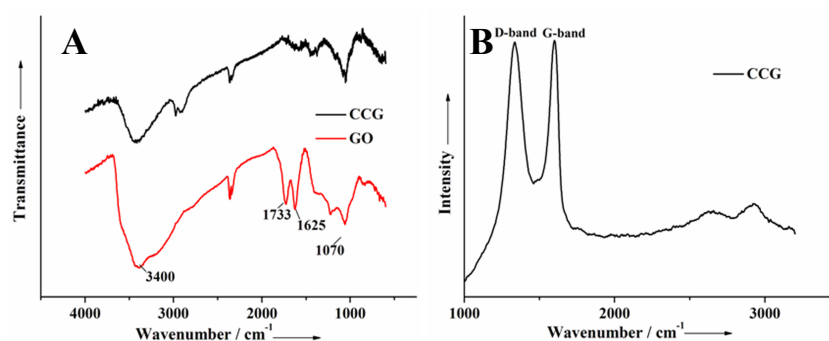


Fig. S1 Typical FT-IR spectra (A) and Raman spectrum (B) of as-prepared CCG.

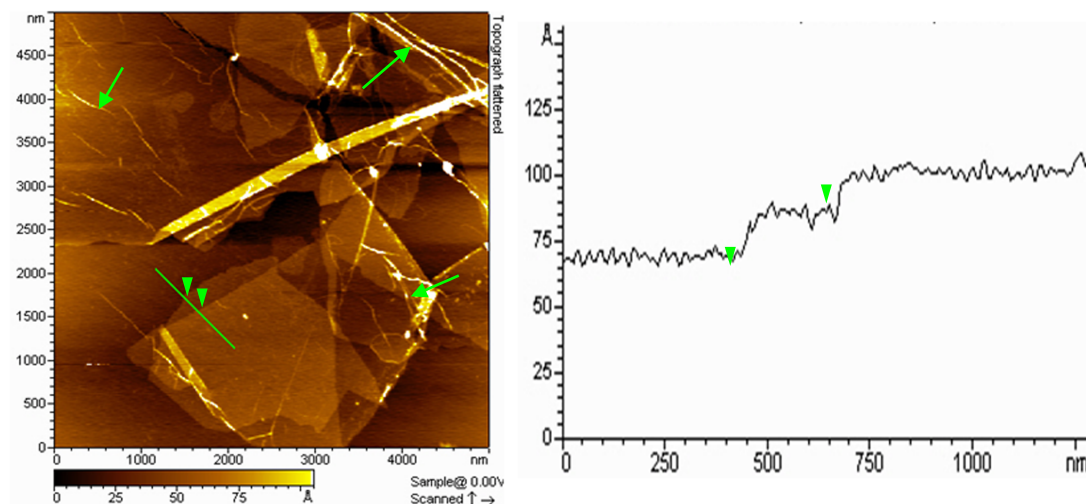


Fig. S2 Typical AFM image and height profile of CCG sheets carried out in liquid phase. The arrows indicate the intrinsic ripples in CCG sheets.

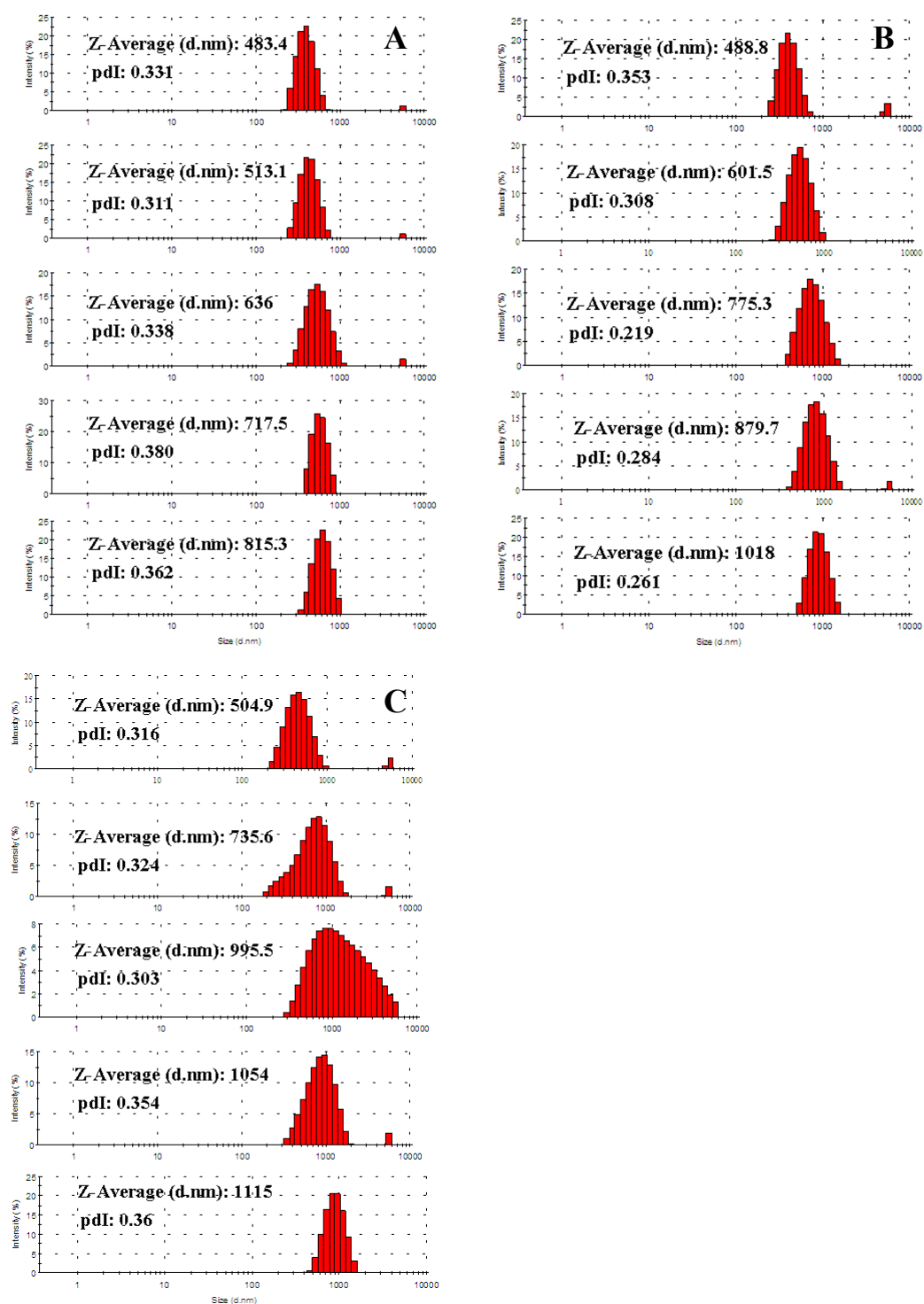


Fig. S3 Size and size distribution of stacked-CCG colloids with the concentrations of (A) 8 $\mu\text{g/mL}$; (B) 18 $\mu\text{g/mL}$ and (C) 30 $\mu\text{g/mL}$, respectively, in the NaCl concentration range of 0-400 mM (top to bottom).

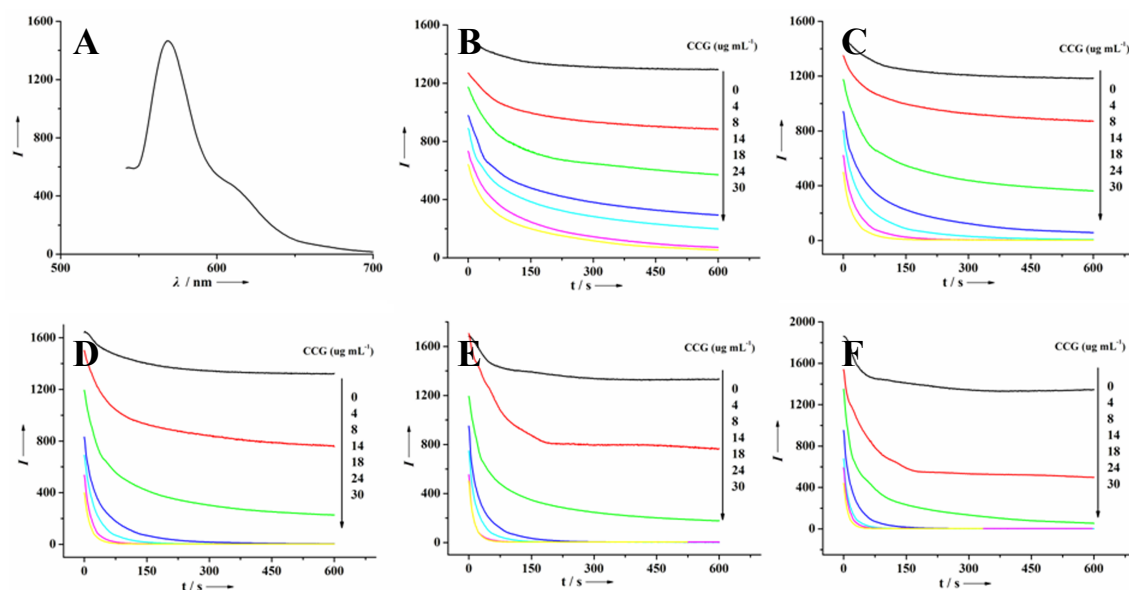


Fig. S4 (A) FL spectrum of Cy3-labelled ssDNA and Real-time monitoring of the FL changes as a result of the activity of stacked-CCG colloids generated in 20 mM PBS buffer (pH 7.4) containing varying NaCl levels: (B) 0 mM; (C) 50 mM; (D) 100 mM; (E) 200 mM; (F) 400 mM. Experimental conditions: 87 nM ssDNA, $\lambda_{\text{ex}}/\lambda_{\text{em}} = 540/567$ nm, 25 °C.

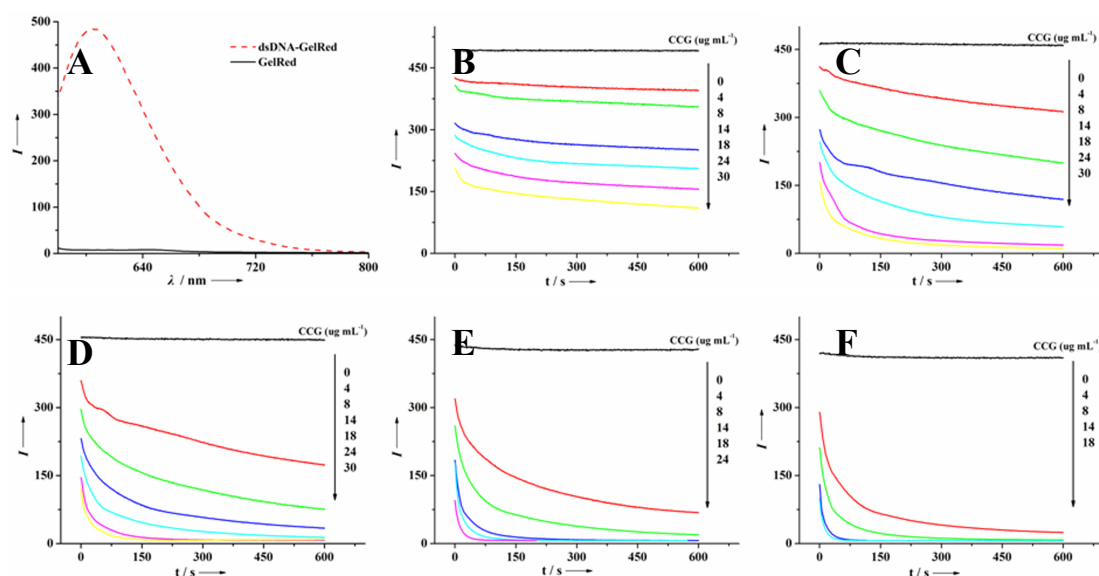


Fig. S5 (A) FL spectrum of dsDNA-GelRed complex and Real-time monitoring of the FL changes as a result of the activity of stacked-CCG colloids generated in 20 mM PBS buffer (pH 7.4) containing varying NaCl levels: (B) 0 mM; (C) 50 mM; (D) 100 mM; (E) 200 mM; (F) 400 mM. Experimental conditions: 87 nM dsDNA, $\lambda_{\text{ex}}/\lambda_{\text{em}} = 530/605$ nm, 25 °C.

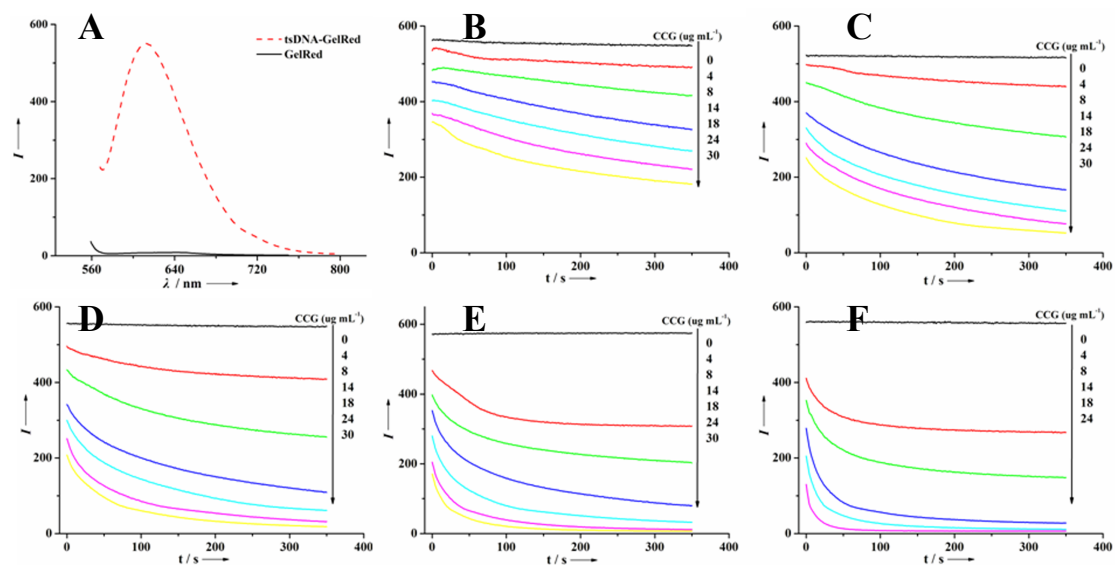


Fig. S6 (A) FL spectrum of tsDNA-GelRed complex and Real-time monitoring of the FL changes as a result of the activity of stacked-CCG colloids generated in 20 mM PBS buffer (pH 7.4) containing varying NaCl levels: (B) 0 mM; (C) 50 mM; (D) 100 mM; (E) 200 mM; (F) 400 mM. Experimental conditions: 87 nM tsDNA, $\lambda_{\text{ex}}/\lambda_{\text{em}} = 530/605$ nm, 25 °C.

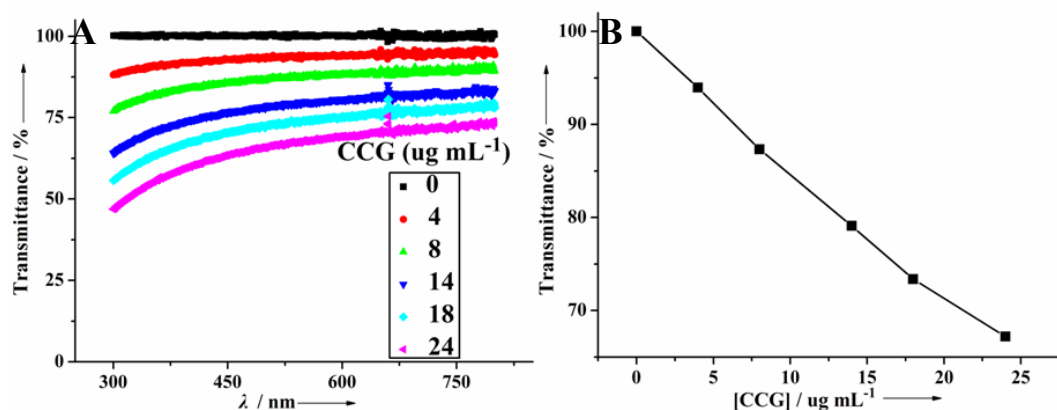


Fig. S7 (A) Transmittance of the reaction system in the presence of varying CCG levels; (B) The transmittances at $\lambda = 530$ nm as a function of the CCG concentration.

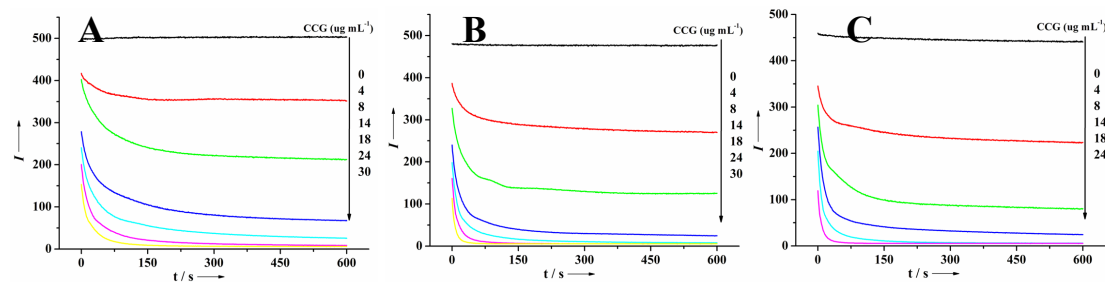


Fig. S8 Real-time monitoring of the FL changes as a result of the activity of stacked-CCG colloids generated in 20 mM PBS buffer (pH 7.4) containing 50 mM NaCl and varying MgCl_2 levels: (A)

10 mM; (B) 30 mM; (C) 50 mM. Experimental conditions: 87 nM tsDNA, $\lambda_{\text{ex}}/\lambda_{\text{em}} = 530/605$ nm, 25 °C.

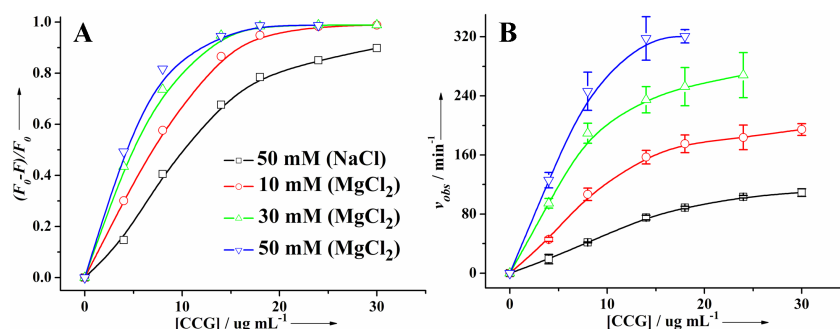


Fig. S9 Dependence of quenching efficiency (A) initial quenching rate (v_{obs}) (B) of tsDNA on CCG concentration, measured in 20 mM PBS buffer solution (50 mM NaCl, pH 7.4, 25 °C) with varying MgCl_2 levels, in comparison with those measured in 20 mM PBS buffer solution (pH 7.4) containing 50 mM NaCl. The quenching efficiency was defined as $(F_0-F)/F_0$, where F_0 and F were the FL signals in the absence or presence of stacked-CCG colloids, respectively. The initial quenching rate was obtained from linear plots of the data points over the first 10-20% of the reaction.

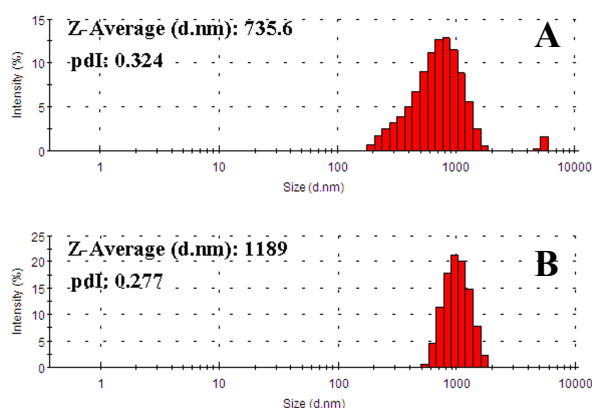


Fig. S10 Z-average diameters of stacked-CCG assembled in (A) 200 mM NaCl; (B) 100 mM NaCl, 10 mM MgCl_2 , containing 8 $\mu\text{g/mL}$ CCG.