

Fig. S1 FT-IR spectra of CNTs and ACNTs.

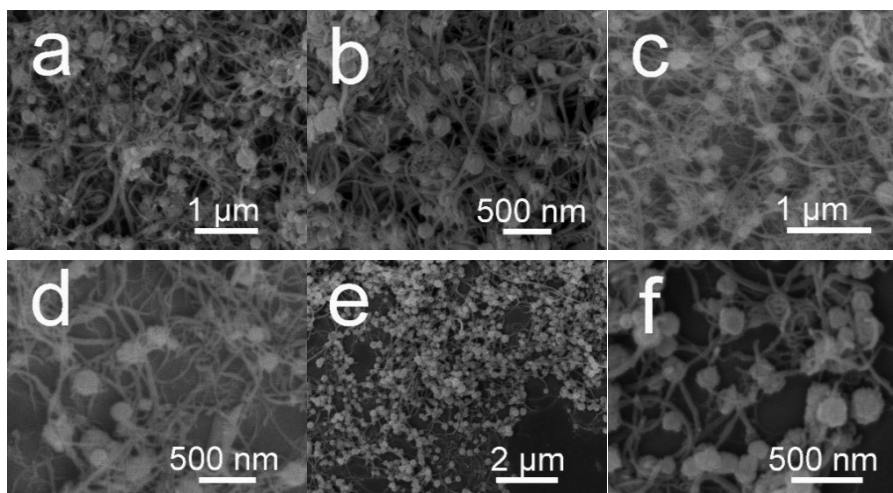


Fig. S2 SEM images of (a-b) ACNT-M0.75 (without addition of CTAB in raw materials), (c-d) ACNT-M0.375 and (e-f) ACNT-M1.5.

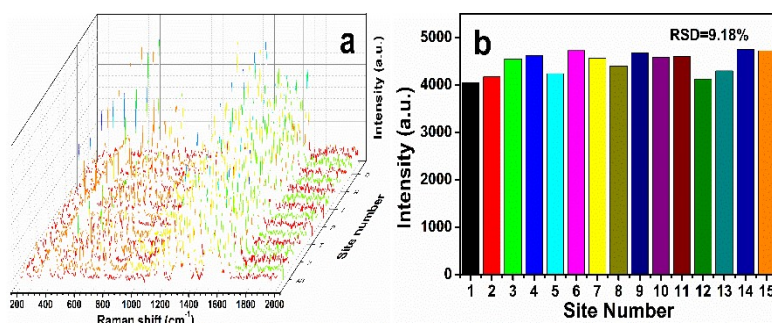


Fig. S3 (a) SERS spectra of R6G collected randomly from 15 spots of ACNTs-M0.75 substrate, (b) SERS intensity distribution at 612 cm^{-1} corresponding to part (a).

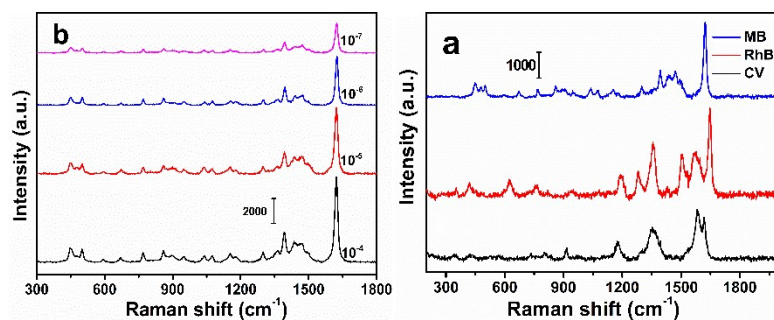


Fig. S4 (a) SERS spectra of a series of organic dyestuff with concentration of 10^{-6} M (MB, RhB and CV), (b) Raman spectra of MB with different concentrations on ACNTs-M0.5.

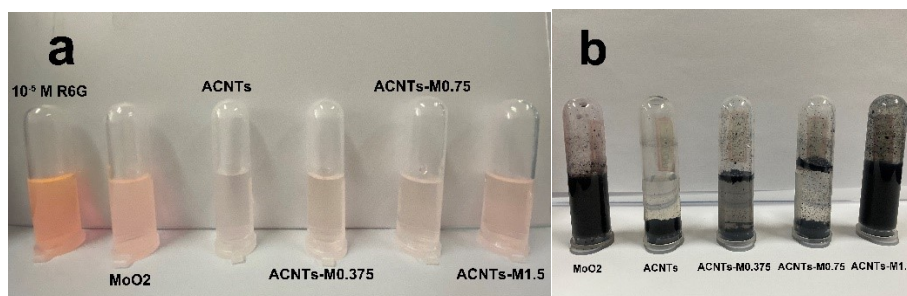


Fig. S5 the adsorption performance of R6G of different samples, (a) the upper layer of liquid after centrifugation after mixing for 30 seconds and (b) static settlement for 5 minutes.

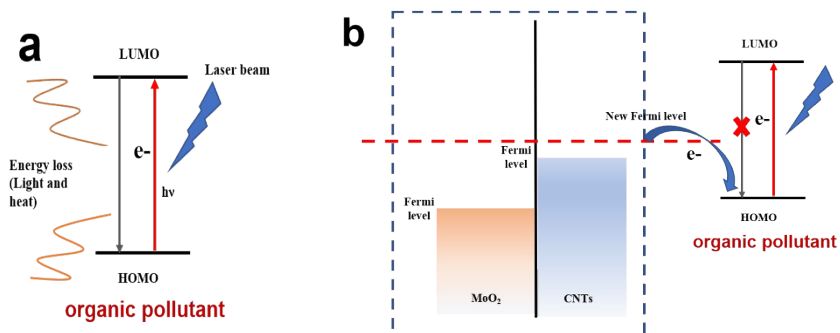


Fig. S6 Schematic illustration of (a) electron transition under excitation conditions, and (b) charge transfer between the molecule and the substrate.