Electronic supplementary information for

Ag Nanoparticle-Decorated Carbon Nanotube Sponges for Removal of Methylene Blue from Aqueous Solution

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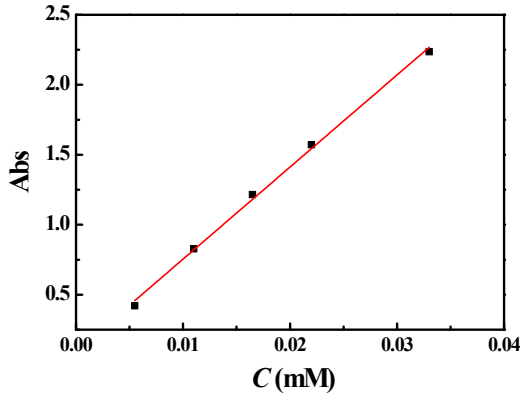

Figure S1. Calibration curve of MB solution.

$$\frac{C_e}{Q_e} = \frac{1}{Q_{max}K_L} + \frac{1}{Q_{max}}C_e$$

Equation S1. Langmuir model, where C_e (mg/L) is equilibrium concentration of MB solution; Q_e (mg/g) is the amount of MB adsorbed per unit mass of adsorbate at equilibrium; and Q_{max} and K_L are the Langmuir constants related to adsorption capacity and rate of adsorption, respectively.

$$\ln Q_e = \ln K_F + \frac{1}{n}\ln C_e$$

Equation S2. Freundlich model, where K_F (mg/g (L/mg)$^{1/n}$) and n are Freundlich constants related to the adsorption capacity of the adsorbent.

$$\ln\left(Q_e - Q_t\right) = \ln\left(Q_e\right) - K_1 t \quad (1)$$

$$\frac{t}{Q_t} = \frac{1}{K_2 Q_e^2} + \frac{t}{Q_e} \quad (2)$$

$$Q_t = K_3 t^{\frac{1}{2}} \quad (3)$$

Equation S3. Adsorption kinetic models described by different empirical equations: (1) pseudo-first-order model, (2) pseudo-second-order model and (3) intraparticle diffusion model, where Q_e and Q_t are the amounts of MB adsorbed at equilibrium and at time t, respectively, and K_1, K_2 and K_3 are the rate constants of pseudo-first-order kinetic model, pseudo-second-order kinetic model and intraparticle diffusion model, respectively.

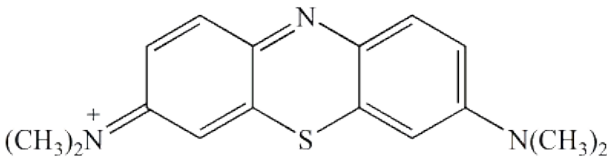

Figure S2. The structure of MB at pH > 3.

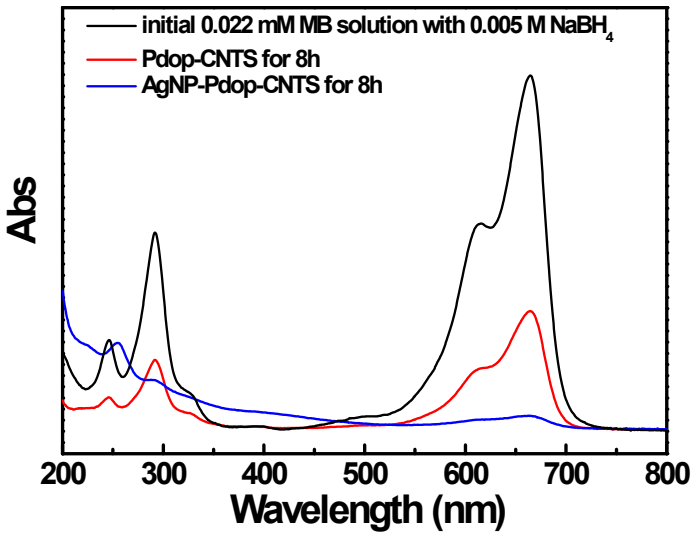

Figure S3. UV-vis spectra for 0.022 mM MB solution with 0.005 M $NaBH_4$, Pdop-CNTS and AgNP-Pdop-CNTS after 8 h immersion in solution.

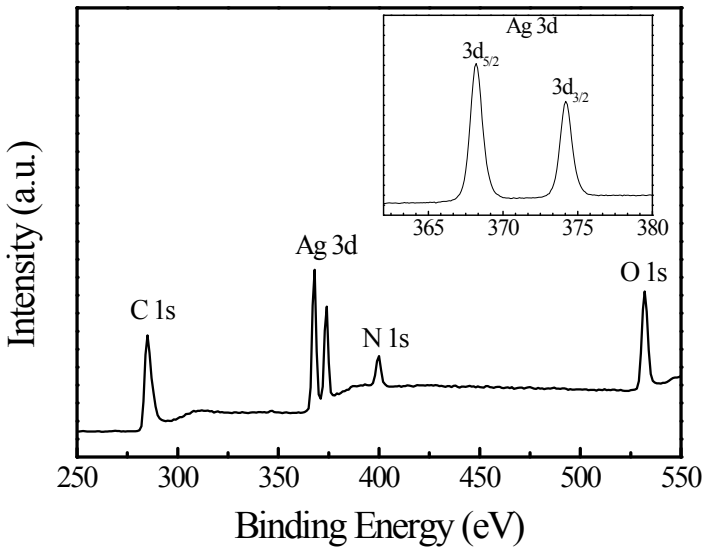

Figure S4. XPS spectra of AgNP-Pdop-CNTS (Inset is XPS spectra of Ag 3d orbitals).

This ESI replaces the version published on 13/04/2020, which did not include the XPS analysis in figure S4.