Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

Millimeter-sized carbon/TiO_2 beads fabricated by phase inversion method for oil and dye adsorption

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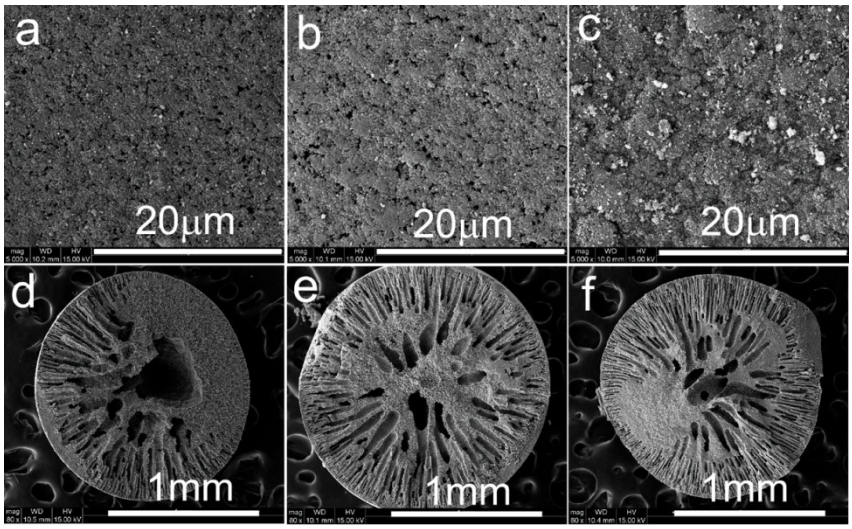

Figure S1. SEM images of CB-2-2F (a, d), CB-4 (b, e) and CB-4-1 (c, f): the surfaces (a-c) and the cross-sections (d-f).

Adsorption isotherm of RB on CB-4-1F

The adsorption isotherms of RB on CB-4-1F were measured as follows: 0.5 g of carbon bead was introduced into a plastic bottle containing 40 mL of a RB solution with initial concentrations of 10-60 mg/L. The bottle was then transferred into a shaker and shaken for 24 h at 20 ^{o}C. After equilibration, the solid particles were removed, and the adsorption capacity of RB onto the carbon beads was determined by applying the following equation:[1]

$$qe=(Co-Ce)V/m$$

where qe is the equilibrium adsorption capacity (mg/g), Co and Ce are the initial and equilibrium concentrations of the RB solution (mg/L), respectively, V is the volume of the RB solution (mL), and m is the mass of the carbon bead (mg).

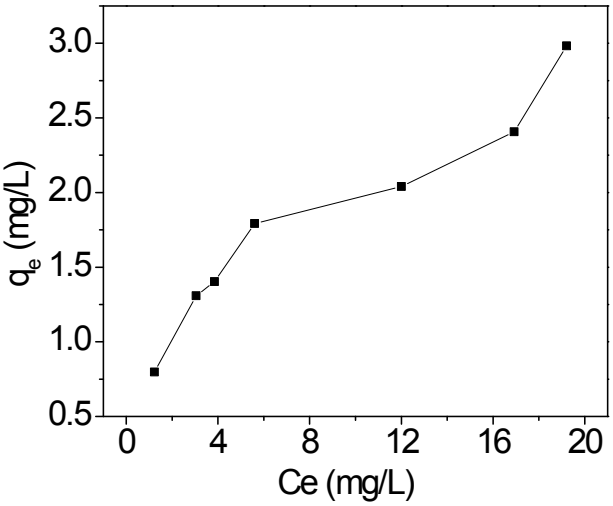

Figure S2. Adsorption isotherms of RB on CB-4-1F at 20 °C.

Langmuir and Freundlich models were used in the analysis of the equilibrium adsorption isotherm data. The isotherm constants are shown in Table S1.The correlation coefficients of R^2 are 0.976 and 0.96 for Langmuir and Freundlich, respectively, indicating the RB adsorption on CB-4-1F fits Langmuir model better.

Table S1. Isotherm constants for RB adsorbed on CB-4-1F at 20 °C.

Langmuir		Freundlich	
$q_e = \frac{q_{max} K_L Ce}{1 + K_L Ce}$	q_{max}: 2.79 mg g^{-1} K_L: 0.315 L mg^{-1} R^2: 0.976	$q_e = K_F\, Ce^{1/n}$	K_F: 0.776 mg/g $(mg/L)^n$) R^2: 0.96 N: 2.337

Reference

1. C. X. Yan, C. Q. Wang, J. F. Yao, L. X. Zhang and X. Q. Liu, *Colloids and Surfaces A-Physicochemical and Engineering Aspects*, 2009, 333, 115-119.