Supporting materials for

Mesoporous Magnetic Carbon Nanocomposite Fabrics towards Highly Efficient Cr(VI) Removal

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S1. Chromium Removal Procedure

Cr(VI) solutions with different concentrations (1.5, 2.0, 2.5, 3.5 and 4.0 mg L^{-1} in DI water) were treated with 1.0 g L^{-1} MN to study the removal capacity. For adsorbent concentration study, the potassium dichromate solution containing 4.0 mg L^{-1} Cr(VI) was treated with different concentrations of MN (0.5, 1.0, 1.5, and 2.0 g L^{-1}). Briefly, the mixture was kept under ultrasonication at room temperature for 10 min. Then, the MN was separated from the solutions by centrifuging (Fisher Scientific, Centrific 228). Meanwhile, MN can be separated from the solutions by using a permanent magnet and gave similar analytical results. The clear solutions were then collected and subjected to colorimetric analysis to determine the remaining chromium concentrations. The pH study was conducted at different pH values from 1 to 11, the pH value was adjusted by using hydrochloric acid (using 1 mol L^{-1} HCl to adjust pH from pH 2-4 and concentrated HCl for pH=1) or sodium hydroxide solutions (1 mol L^{-1}). For colorimetric analysis,[1] the aforementioned clear solutions (5.25 mL) were taken into test tubes, o-phosphoric acid (0.50 mL, 4.5 M) and DPC (0.25 mL, 5 g L^{-1}) were then added. After incubation at room temperature for 30 minutes for color development, the absorbance of the samples was measured in a UV-Vis spectrophotometer (Cary 50). Peaks with varied intensities were observed in the spectrometer scans at 540 nm wavelength depending on the concentrations of the remaining Cr(VI) in the samples.

S2. UV-Vis Results

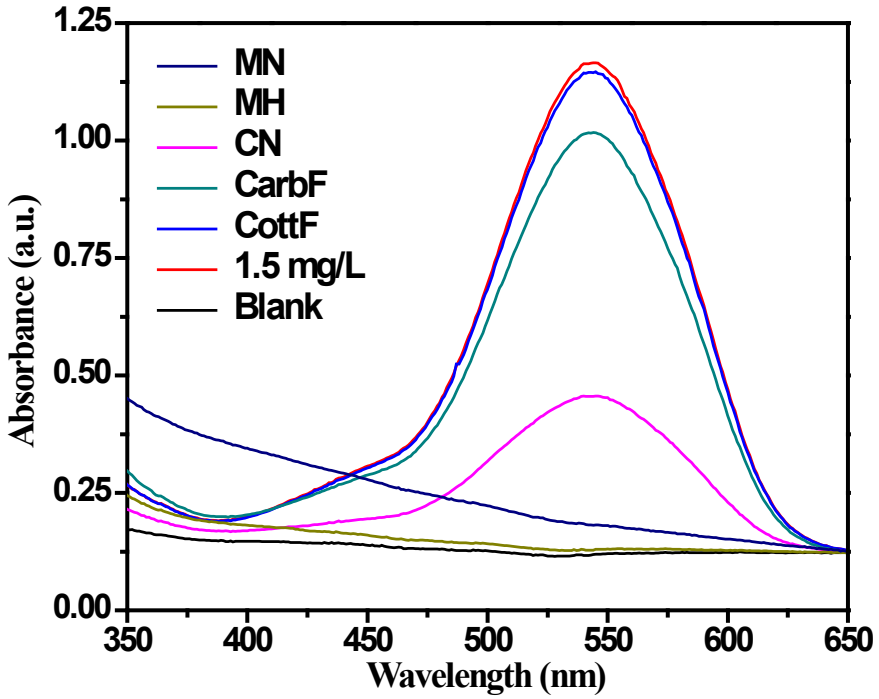

Fig. S1 UV-vis absorption of the Cr (VI) solution treated with different materials. [Adsorbent]= 1.0 mg L^{-1}, [Cr(VI)]=1.5 mg L^{-1}, treating time: 10 min, solution pH=7.

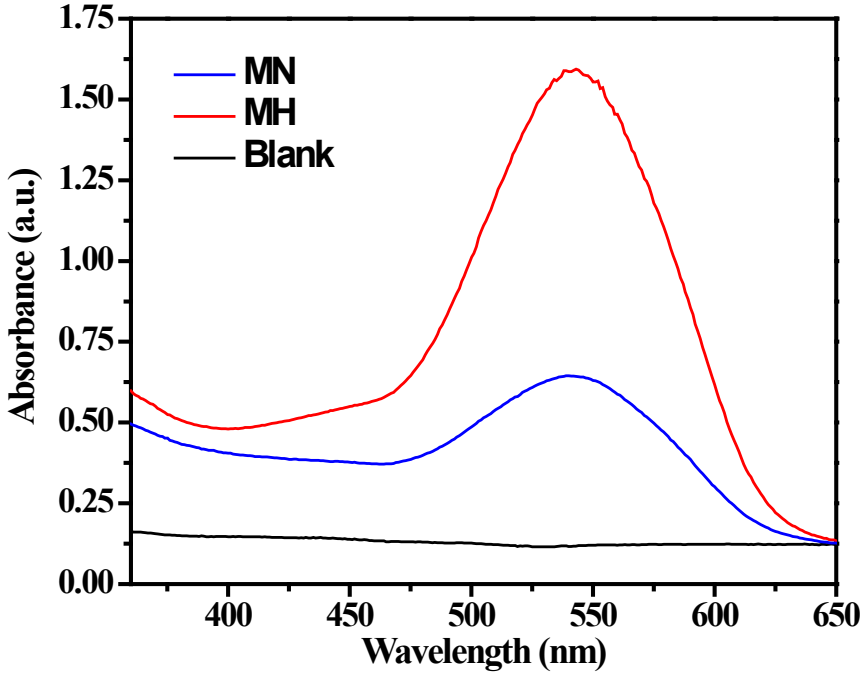

Fig. S2 UV-vis absorption of the Cr (VI) solution treated with MN and MH. [Adsorbent]= 1.0 mg L^{-1}, [Cr(VI)]=4.0 mg L^{-1}, treating time: 10 min, solution pH=7.

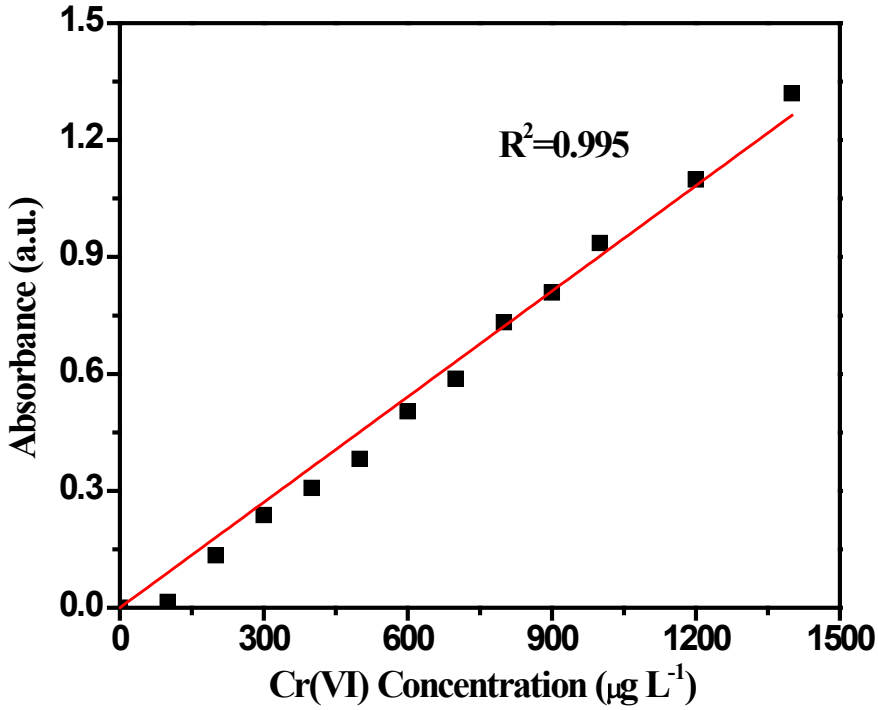

Fig. S3 Linear relationship between the Cr(VI) concentration and UV-Vis absorption tested at room temperature. Linear equation: [Absorbance]=9.7232E-4×[Cr(VI)].

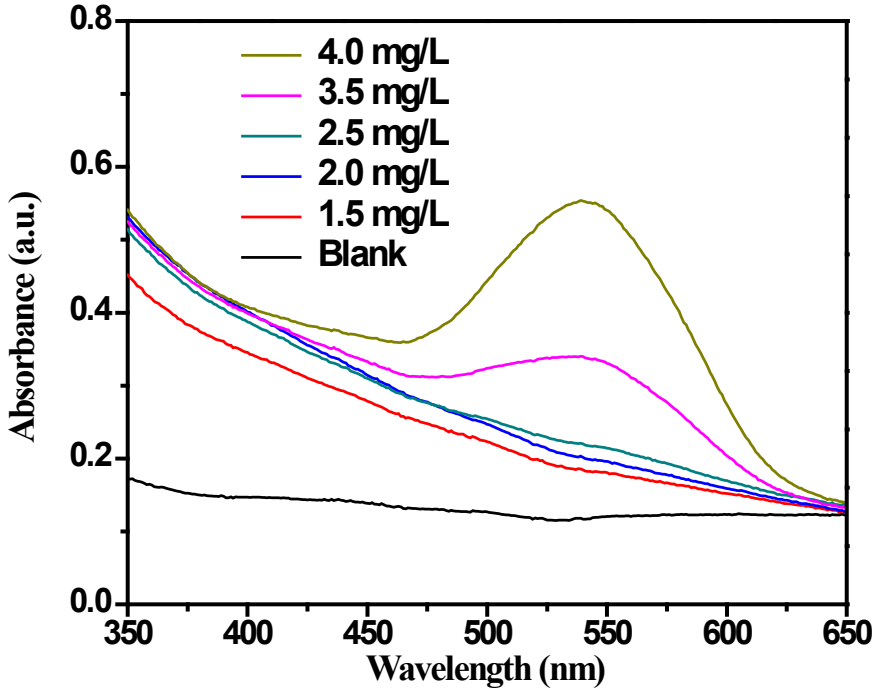

Fig. S4 UV-vis absorption of the Cr (VI) solution with different original concentrations. [MN] = 1.0 g L^{-1}, treating time: 10 min, solution pH=7.

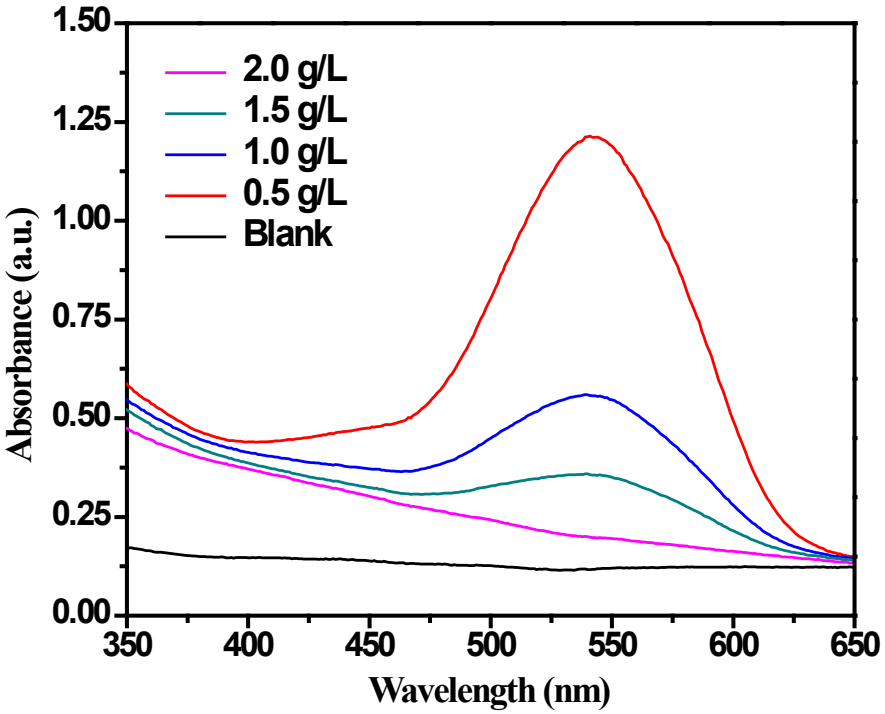

Fig. S5 UV-vis absorption of the Cr (VI) solution treated with MN of different concentrations. [Cr(VI)]= 4.0 mg L^{-1}, treating time: 10 min, solution pH=7.

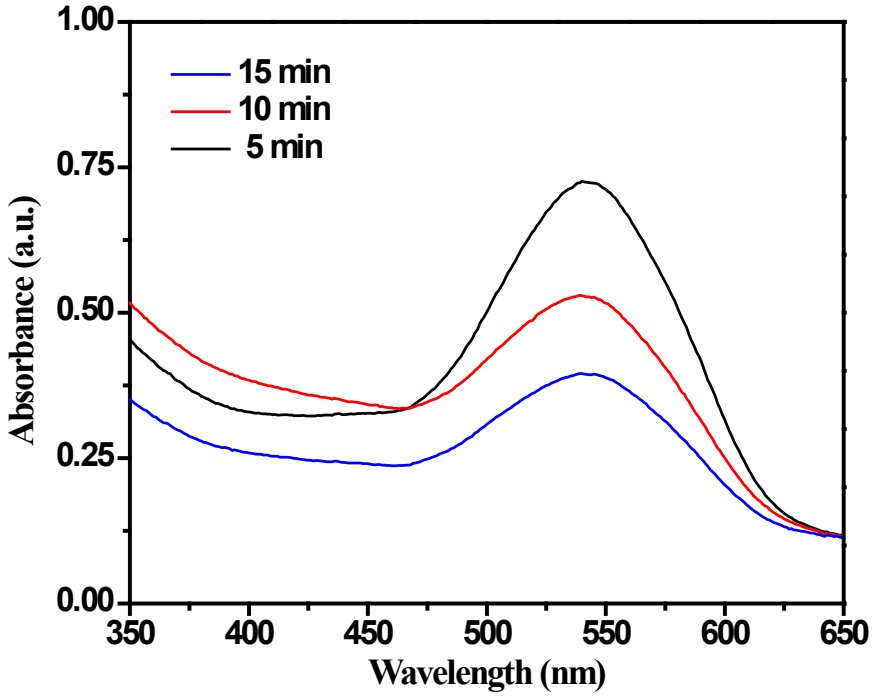

Fig. S6 UV-vis absorption of the solutions with different time duration. ([MN]= 1 g L^{-1}, [Cr(VI)]= 4.0 mg L^{-1}, pH=7)

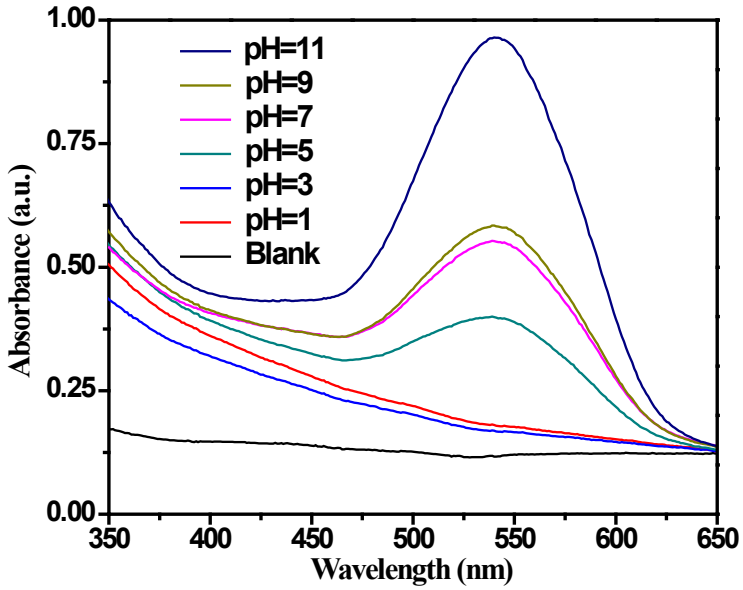

Fig. S7 UV-vis absorption of the Cr (VI) solution after treatment at different pH conditions. [MN] = 1.0 g L^{-1}, [Cr(VI)] = 4.0 mg L^{-1}, treating time: 10 min.

S3. Magnetic Property

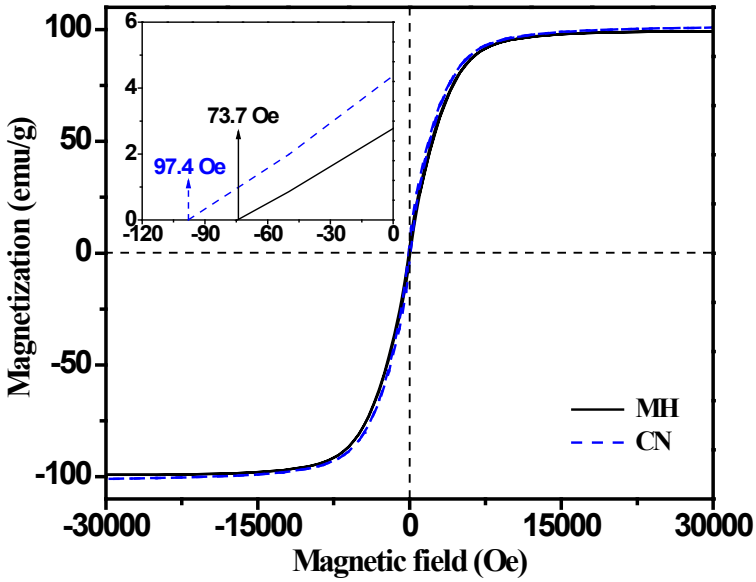

Fig. S8 Magnetic hysteresis loop of the MH and CN at room temperature.

Reference

1. M. Gardner and S. Comber, *Analyst*, 2002, **127**, 153-156.