Electronic Supplementary Material (ESI) for RSC Advances.

Microstructured Macroporous Adsorbent Composed of Polypyrrole Modified Natural Corncob-core Sponge for Cr(VI) Removal

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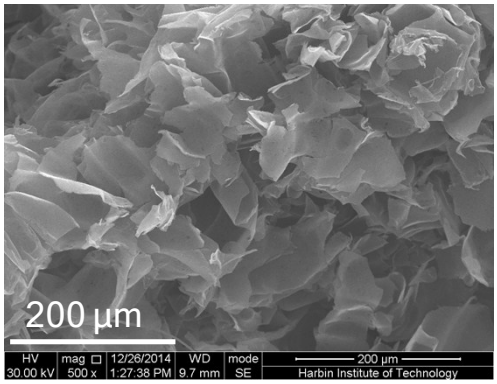

Figure S1. SEM of pure corncob-core, which is composed of quasi-two dimensional microsheets.

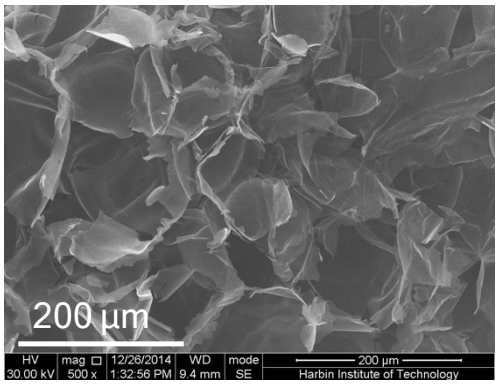

Figure S2. A FE-SEM image of the as-prepared CC-PPy. There is no PPy particles emerged in the sponse pores, indicating that PPy grew along the corncob-core micro-sheets.

Table S1. The PPy loading of the three composite CC-PPy samples demonstrated in Figure 4b.

mass ratio between	1:2	1:1	2:1

Py to CC during polymerization			
PPy	0.4424 g	0.7120 g	1.2162 g
CC	0.4082 g	0.4091 g	0.4207 g
CC-PPy	0.8506 g	1.1211 g	1.6369 g
Loading ratio	52%	64%	74%

Table S2. Kinetics parameters for Cr(VI) adsorption onto the CC-PPy sponses.

Concentration of Cr(VI) ions (mg/L)	pseudo-first-order	Pseudo-second-order	
	R^2	R^2	k_2(g·mg^{-1} min^{-1})
50	0.7225	0.998	0.0023
100	0.4473	0.995	0.0005
150	0.5826	0.994	0.0002
200	0.5094	0.992	0.0001

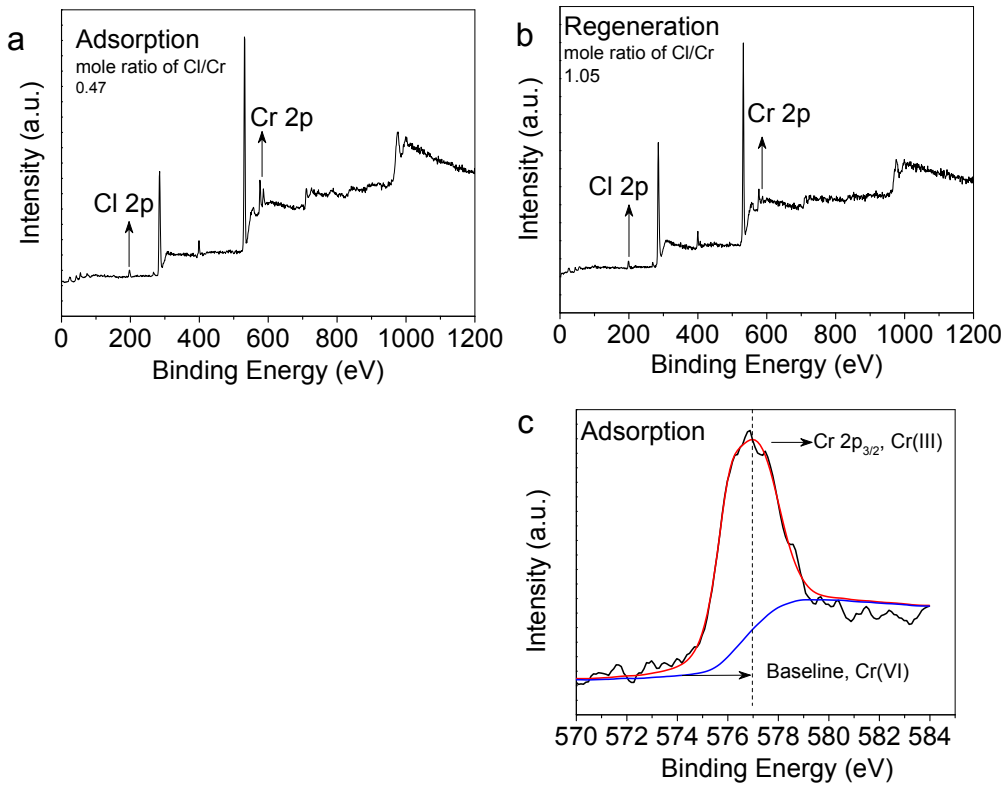

Figure S3. XPS survey-spectra of CC-PPy after adsorption (a) and after adsorption followed by regeneration (b); wide scan of Cr $2p_{3/2}$ for the sample after regeneration (c).

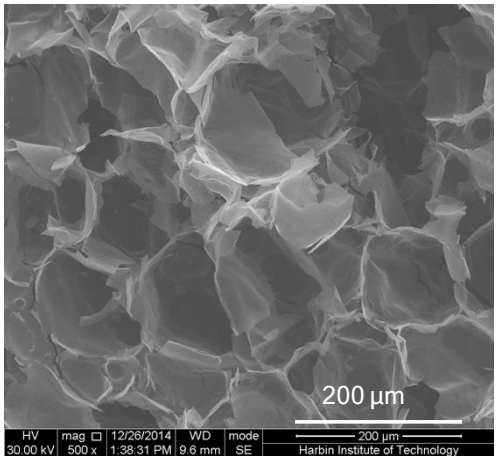

Figure S4. SEM of CC-PPy after adsorption of Cr(VI).