Supporting information

Na_2SO_4-assisted Synthesis of Hexagonal-Phase WO_3 Nanosheet Assemblies with Applicable Electrochromic and Adsorption Properties

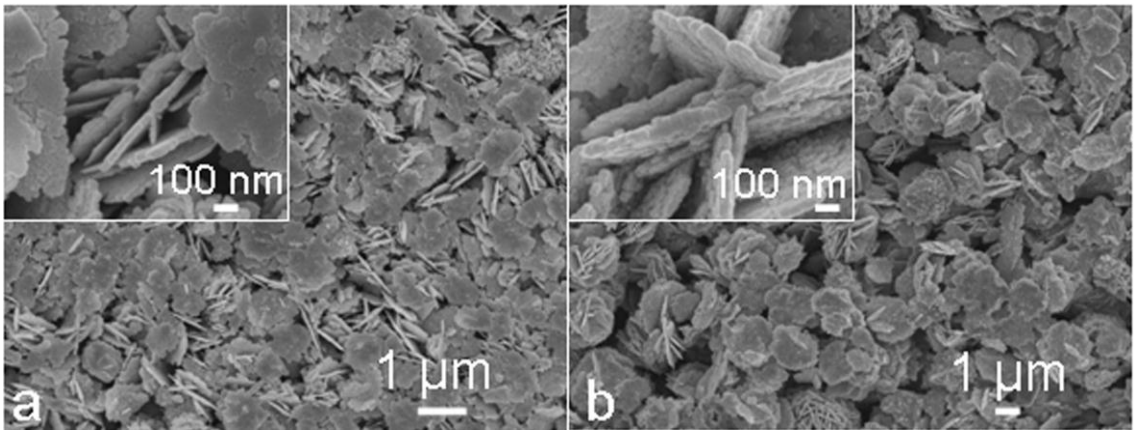

Fig.S1 SEM images of the sample synthesized via hydrothermal treatment at 200 ºC for 10 h with the addition of 80 g Na_2SO_4 (a); SEM images of the sample prepared after reaction at 200 ºC for 30 min with 40 g of Na_2SO_4 (b).

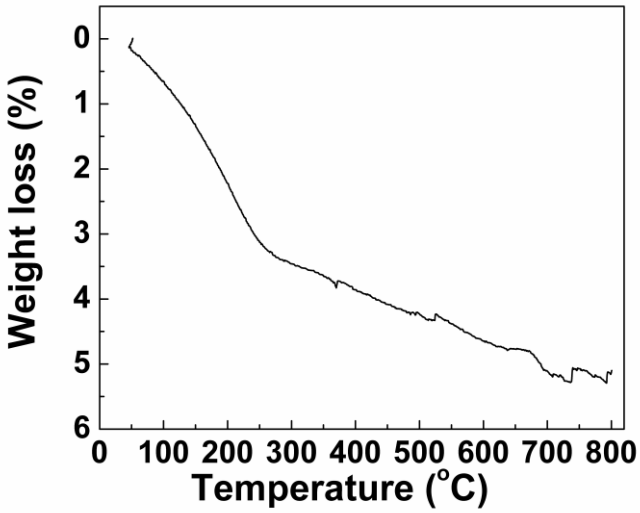

Fig. S2 TGA curve of the sample synthesized via hydrothermal treatment at 200 ºC for 10 h with the addition of 40 g Na_2SO_4.

Fig.S3 TEM images of the sample synthesized via hydrothermal treatment at 200 ºC for 10 h with the addition of 40 g $NaNO_3$.

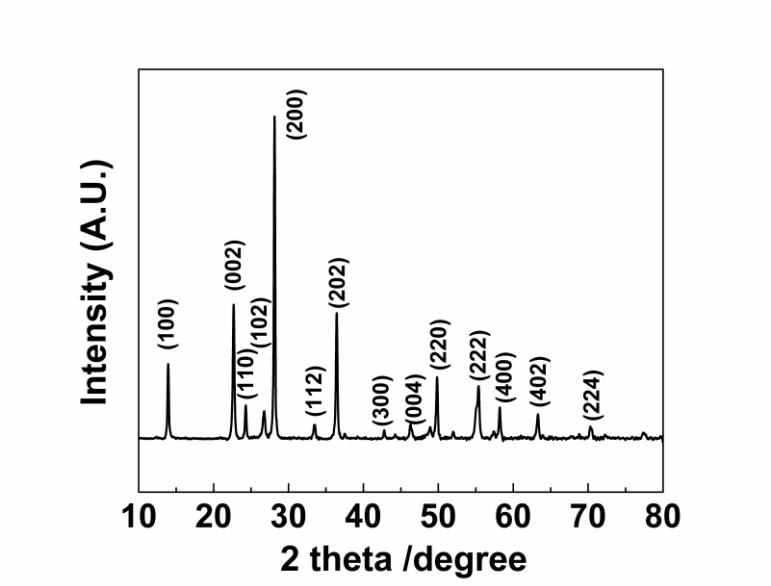

Fig.S4 XRD pattern of the sample prepared after reaction at 200 ºC for 30 min with 40 g of Na_2SO_4. This pattern can be well-indexed to hexagonal-phase WO_3 (JCPDS No. 81-0577).

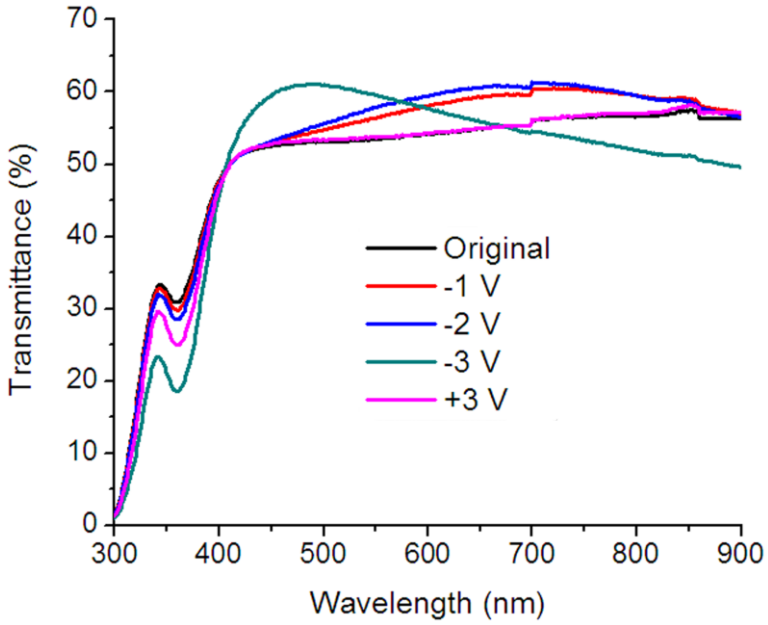

Fig. S5 UV-vis spectra of the WO_3 sample prepared without addition of Na_2SO_4 after potentiostatic polarizations at different potentials for 100 s in a chronological order of 0 V, -1 V, -2 V, -3 V and +3 V.

Table S1 experimental data for adsorption isotherm

C_0(mg L^{-1})	10	20	30	40	50	60	100
C_e(mg L^{-1})	0.437	1.0241	3.3798	7.9326	20.480	27.884	67.932
q_e(mg g^{-1})	9.562	18.972	26.620	32.067	31.817	32.115	32.067

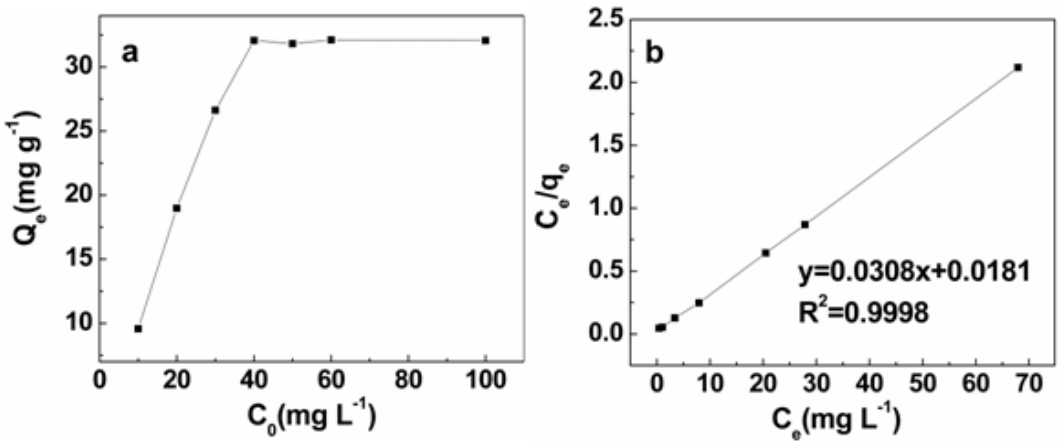

Fig. S6 (a) adsorption isotherms of MB on the prepared hexagonal-phase tungsten oxide nanosheet assemblies and (b) the corresponding linear fit based on Langnuir adsorption isotherm.

The characteristic absorption of MB at 664 nm was chosen as the indicator to be monitored during the adsorption process. The relationship between the removal ability of the as-obtained material (10mg) and the concentrations of the precursory MB solutions (C_0 were controlled to be 10, 20, 30, 40, 50, 60 and 100 mg L^{-1}) is illustrated by the adsorption isotherm shown in Fig, S6a. Tab.1 shows corresponding experimental data. A Langmuir adsorption model (notated as equation S1) was used to represent the relationship between the amount of MB adsorbed at equilibrium (q_e, mg g^{-1}) and the equilibrium solute concentration (C_e, mg L^{-1}),

$$C_e/ q_e =1/(q_m K_L)+ C_e/ q_m \qquad (S1)$$

where q_m (mg g^{-1}) is the maximum adsorption capacity corresponding to complete monolayer coverage and K_L is the equilibrium constant (L mg^{-1}). The q_e and Ce were obtained after 18h because the adsorption amount of MB was not increased noticeably after 18 h, thus it is thought that the adsorption process reached the equilibrium state. As shown in Fig. S6b, the experimental data fits the Langmuir adsorption isotherm well, with correlation coefficients of 0.999 for tungsten oxide. When such a model was adopted to analyze the adsorption isotherms, the maximum adsorption capacities (q_m) of the as-obtained tungsten oxide nanostructures were found to be 33.33 mg g^{-1} for tungsten oxide.