

## 1. Experimental

### 1.1 Primary reagent

The reagents used in the experiment were  $\text{Cr}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ , terephthalic acid,  $\text{N,N}$ -dimethylformamide and absolute ethanol were of analytical grade, and the water used in the experiment was distilled water. And the  $\text{TiO}_2$  used in this work was P25 and was not further processed.

### 1.2 Replicates and statistical methods

The process of repeated cycles was as follows: 20%  $\text{TiO}_2/\text{MIL-101}(\text{Cr})$  nanocomposite was used as the adsorbent. After performing an adsorption experiment, it was washed several times with ethanol, and then recovered by centrifugation (8000 r/min, 10 min) and drying ( $80^\circ\text{C}$ , 3 h). Repeat the experiment in this way for a total of 5 times.

## 2. Results and discussion

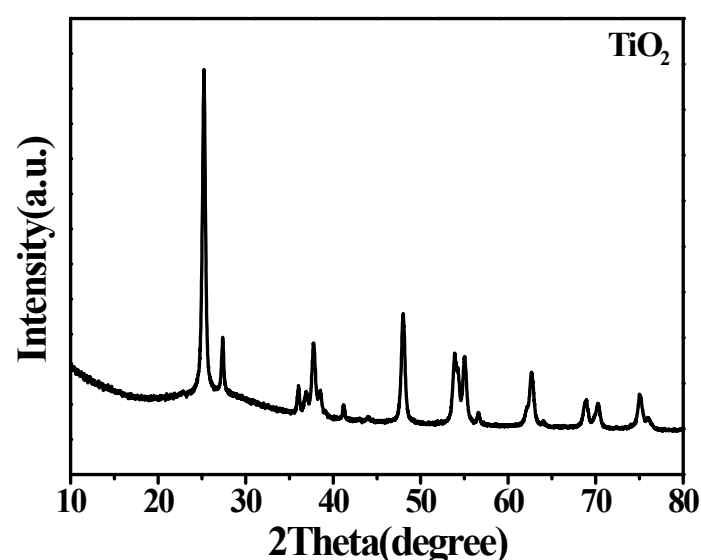


Fig. S1. XRD patterns of pure  $\text{TiO}_2$

All the peaks of pure  $\text{TiO}_2$  at  $25.28^\circ$ ,  $37.80^\circ$ ,  $48.05^\circ$ ,  $53.89^\circ$  and  $55.06^\circ$  corresponded to the (101), (004), (200), (105) and (211) crystal faces of anatase  $\text{TiO}_2$ . It depicted the characteristic tetragonal structure with anatase  $\text{TiO}_2$  (JCPDS card no.21-1272).

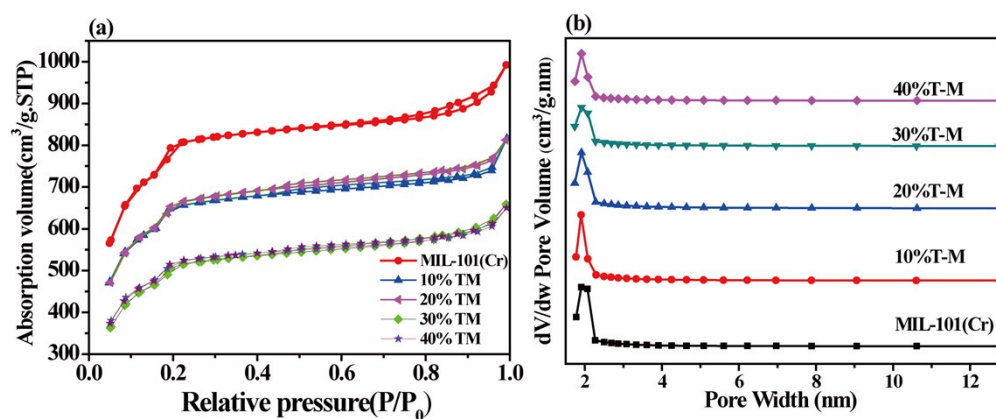


Fig. S2.  $\text{N}_2$  adsorption-desorption isotherms of  $\text{MIL-101}(\text{Cr})$  and 10-40% $\text{TiO}_2/\text{MIL-101}(\text{Cr})$  composites.