

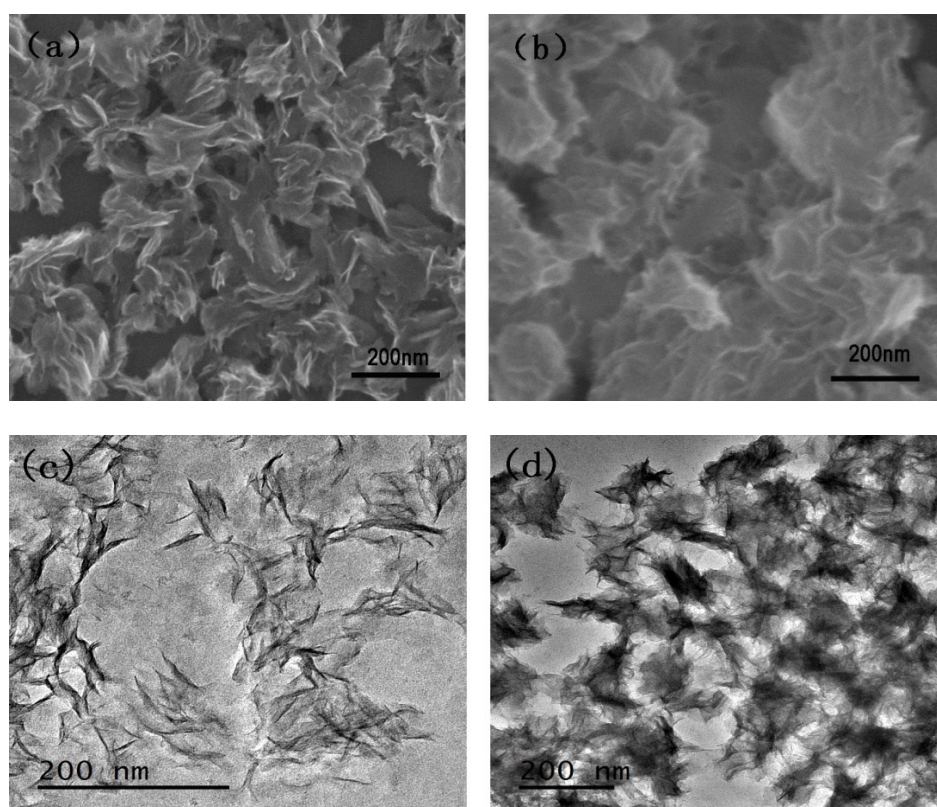
## Supporting materials

# Dual-stimuli-responsive $\text{TiO}_x/\text{DOX}$ nanodrug system for lung cancer synergistic therapy

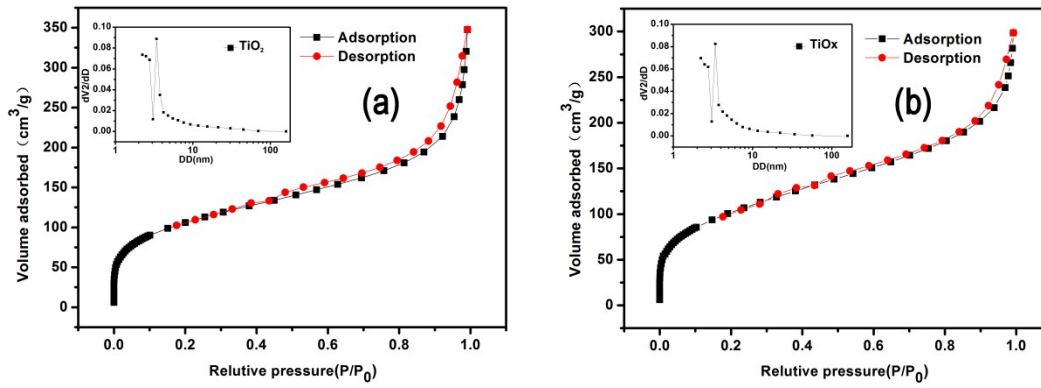
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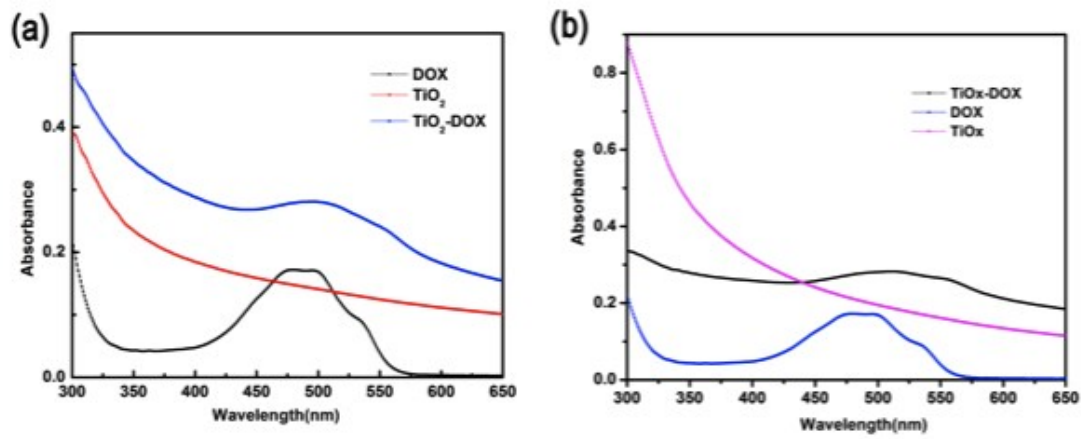
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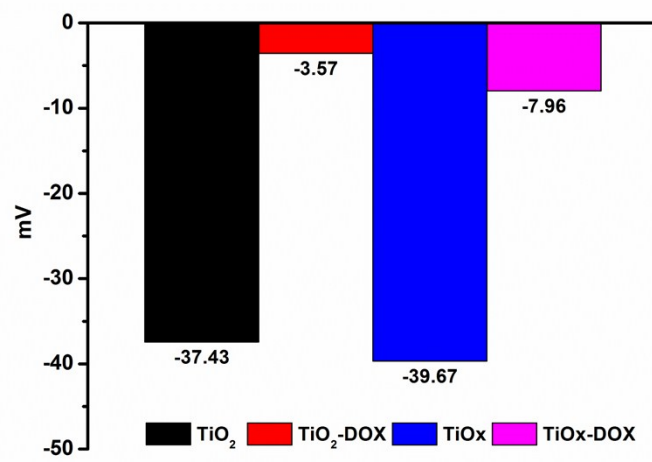
**Fig. S1** (a) Low-magnification SEM image and (c) low-magnification TEM image of the  $\text{TiO}_2$  nanosheets; (b) Low-magnification SEM image and (d) low-magnification TEM image of the  $\text{TiO}_x$  nanosheets.



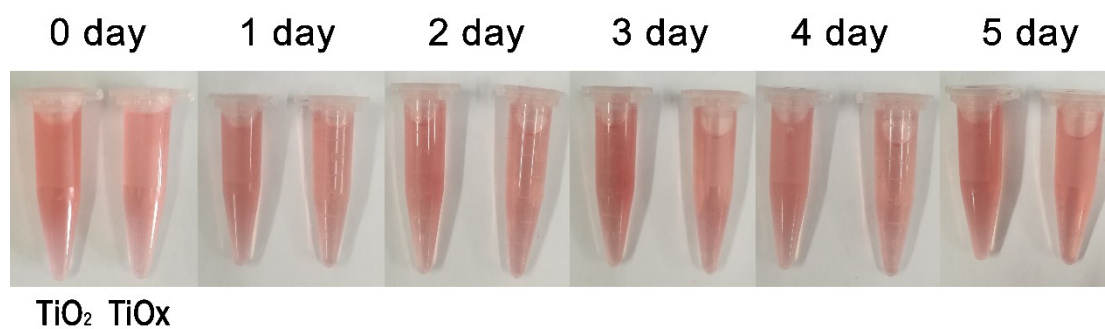
**Fig. S2** Nitrogen adsorption–desorption isotherm obtained and pore size distribution (inset) for the  $\text{TiO}_2$  and  $\text{TiO}_x$  nanosheets (specific surface area: the  $\text{TiO}_2$ :  $379.4 \text{ m}^2/\text{g}$ ,  $\text{TiO}_x$ :  $367.3 \text{ m}^2/\text{g}$ ).



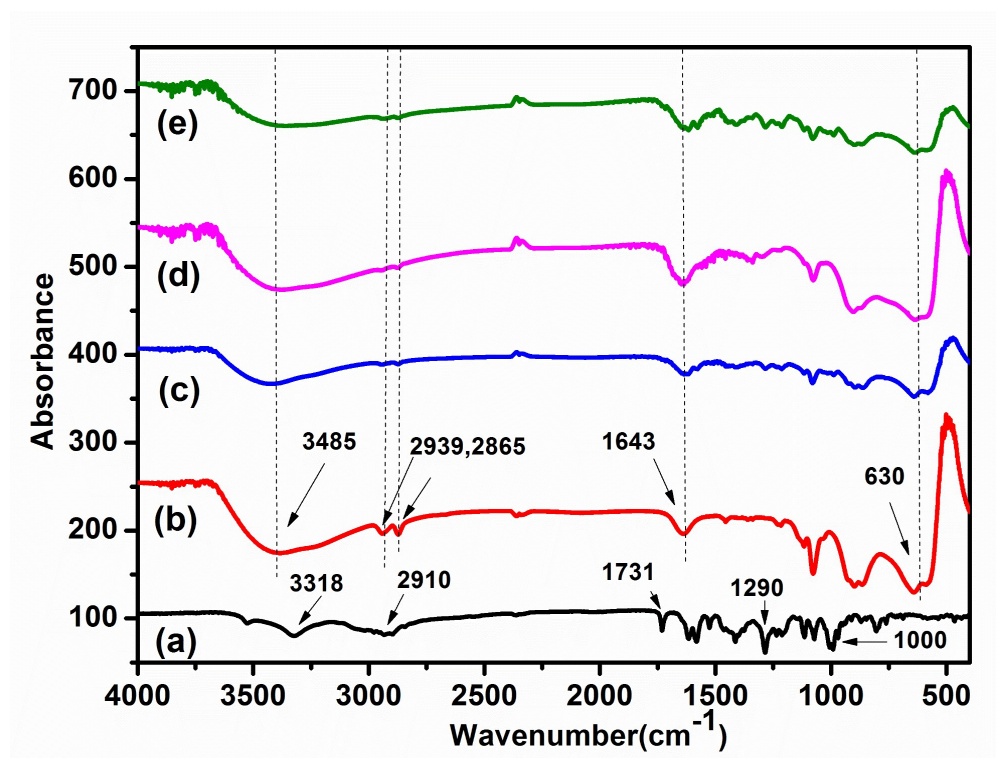
**Fig. S3** (a) UV-visible absorption of  $\text{TiO}_2$  nanosheets,  $\text{TiO}_2/\text{DOX}$  nanocomposite and DOX solution. (b) UV-visible absorption of  $\text{TiO}_x$  nanosheets,  $\text{TiO}_x/\text{DOX}$  nanocomposite and DOX solution.



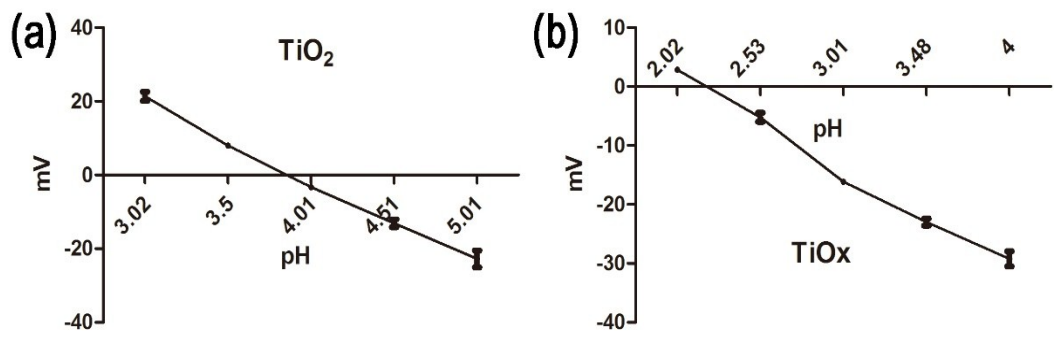
**Fig. S4** Zeta potential of  $\text{TiO}_2$  nanosheets,  $\text{TiO}_x$  nanosheets,  $\text{TiO}_2/\text{DOX}$  nanocomposite and  $\text{TiO}_x/\text{DOX}$  nanocomposite.



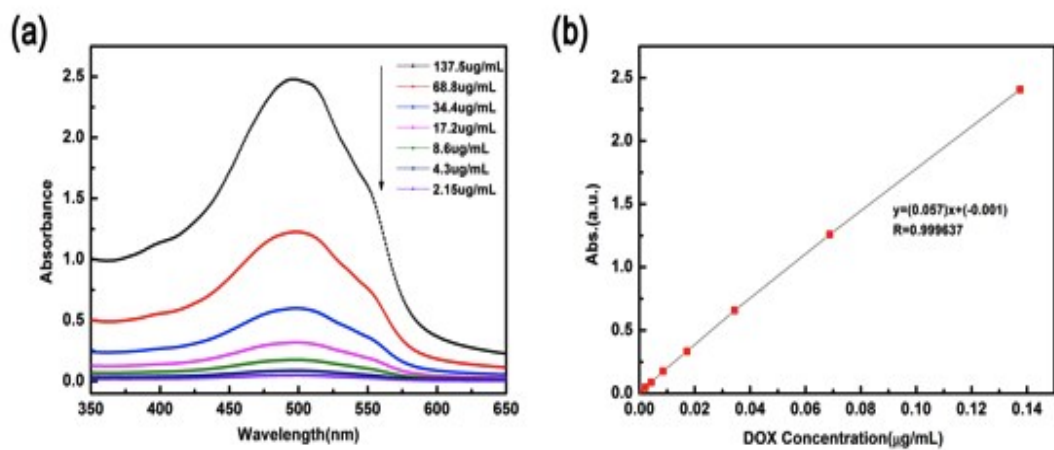
**Fig. S5** Photos of  $\text{TiO}_2/\text{DOX}$  and  $\text{TiO}_x/\text{DOX}$  nanocomposites in PBS solution ( $\text{pH}=7.4$ ) during 5 day storage (left is  $\text{TiO}_2/\text{DOX}$  and right is  $\text{TiO}_x/\text{DOX}$ ).



**Fig. S6** FTIR spectra of (a) DOX, (b)  $\text{TiO}_2$ , (c)  $\text{TiO}_2/\text{DOX}$ , (d)  $\text{TiO}_x$  and (e)  $\text{TiO}_x/\text{DOX}$ .



**Fig. S7** Isoelectric point analysis of (a) TiO<sub>2</sub> and (b) TiO<sub>x</sub> titrating by 0.25 mol/L NaOH.



**Fig. S8** (a) UV-vis spectra of free DOX with different concentrations. (b) The standard curves of free DOX.