

Electronic Supplementary Material

Insight into the effect of surface carboxyl and amino groups on the adsorption of titanium dioxide for acid red G

Wenlong Zhang¹, Xuyang Zhao¹, Lin Zhang¹, Jinwei Zhu^{1,2}, Shanshan Li¹, Ping Hu³,

Jiangtao Feng (✉)¹, Wei Yan¹

1 Department of Environmental Science and Engineering, Xi'an Jiaotong University,
Xi'an 710049, China

2 Shaanxi Electrical Equipment Institution, Xi'an 710025, China

3 Shaanxi Polytechnic Institute, Xianyang 712000, China

E-mail: fjtes@xjtu.edu.cn

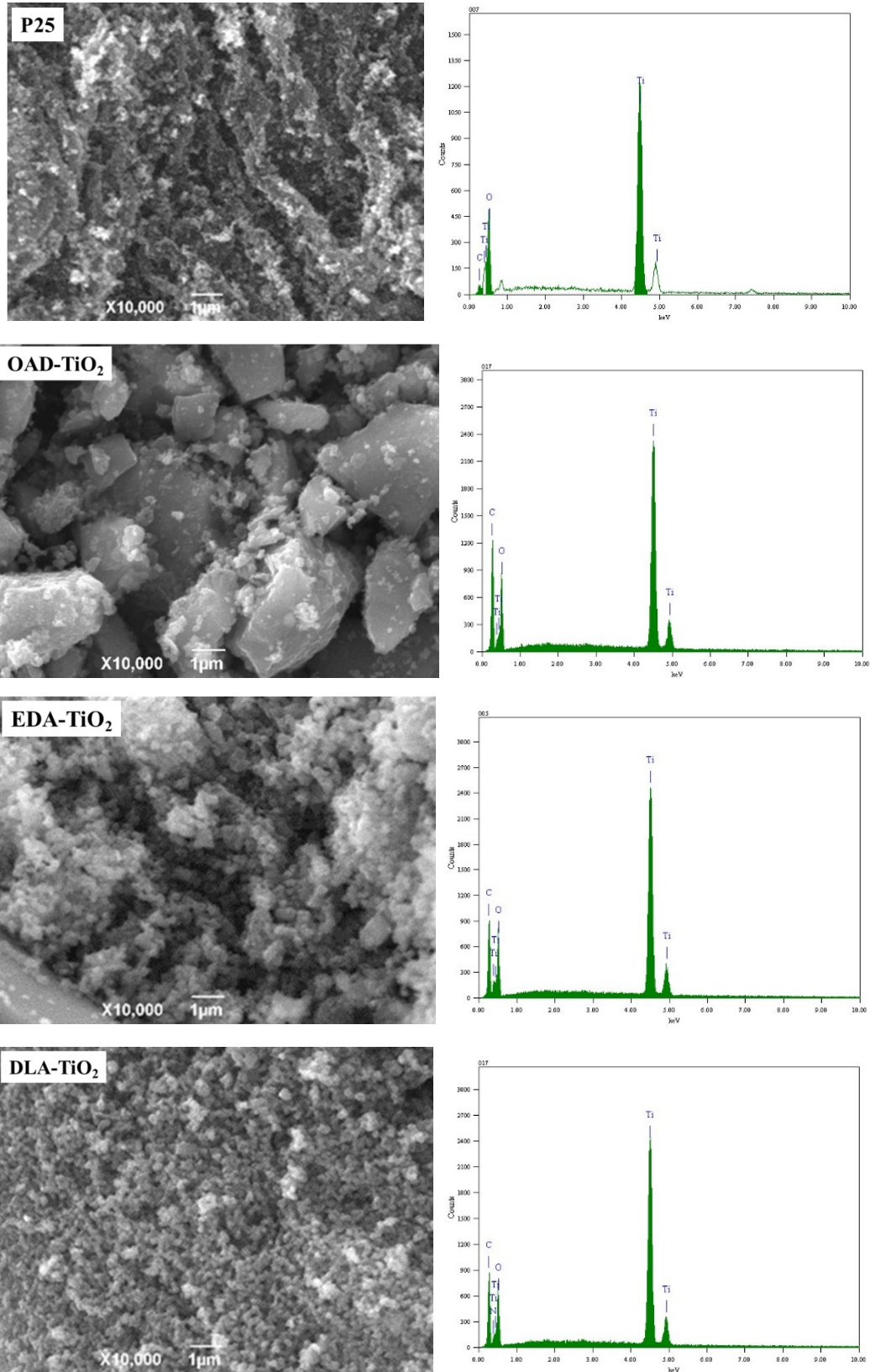
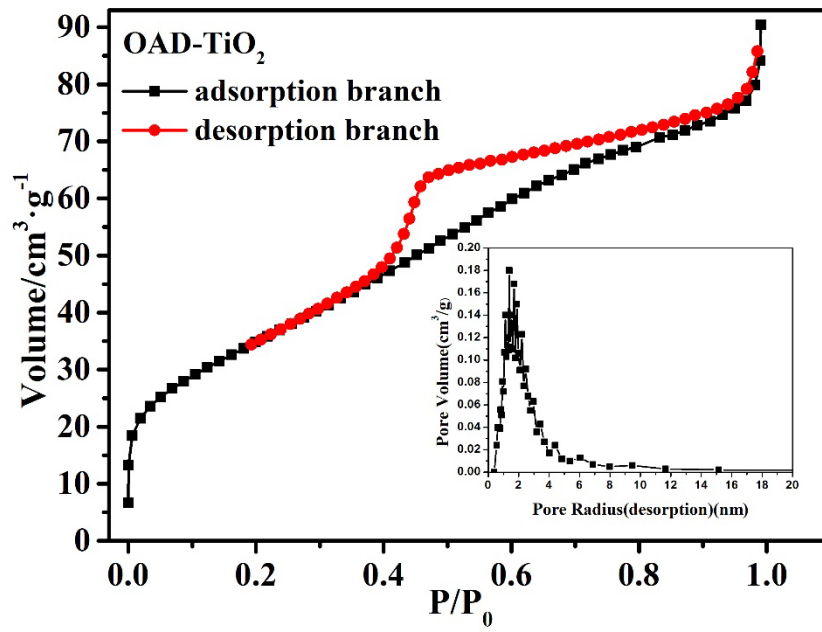
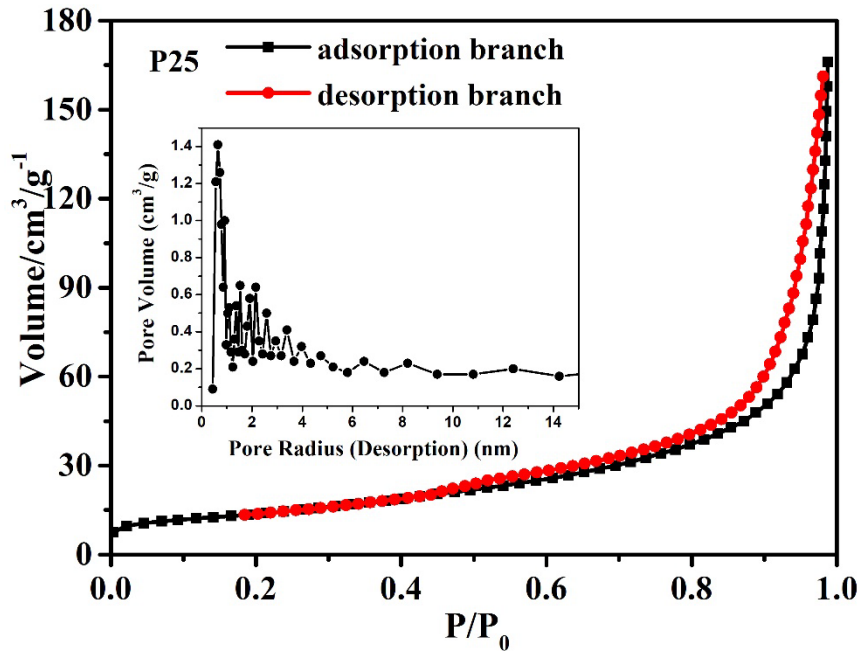


Figure S1. SEM images and EDX spectra of the TiO₂ samples.



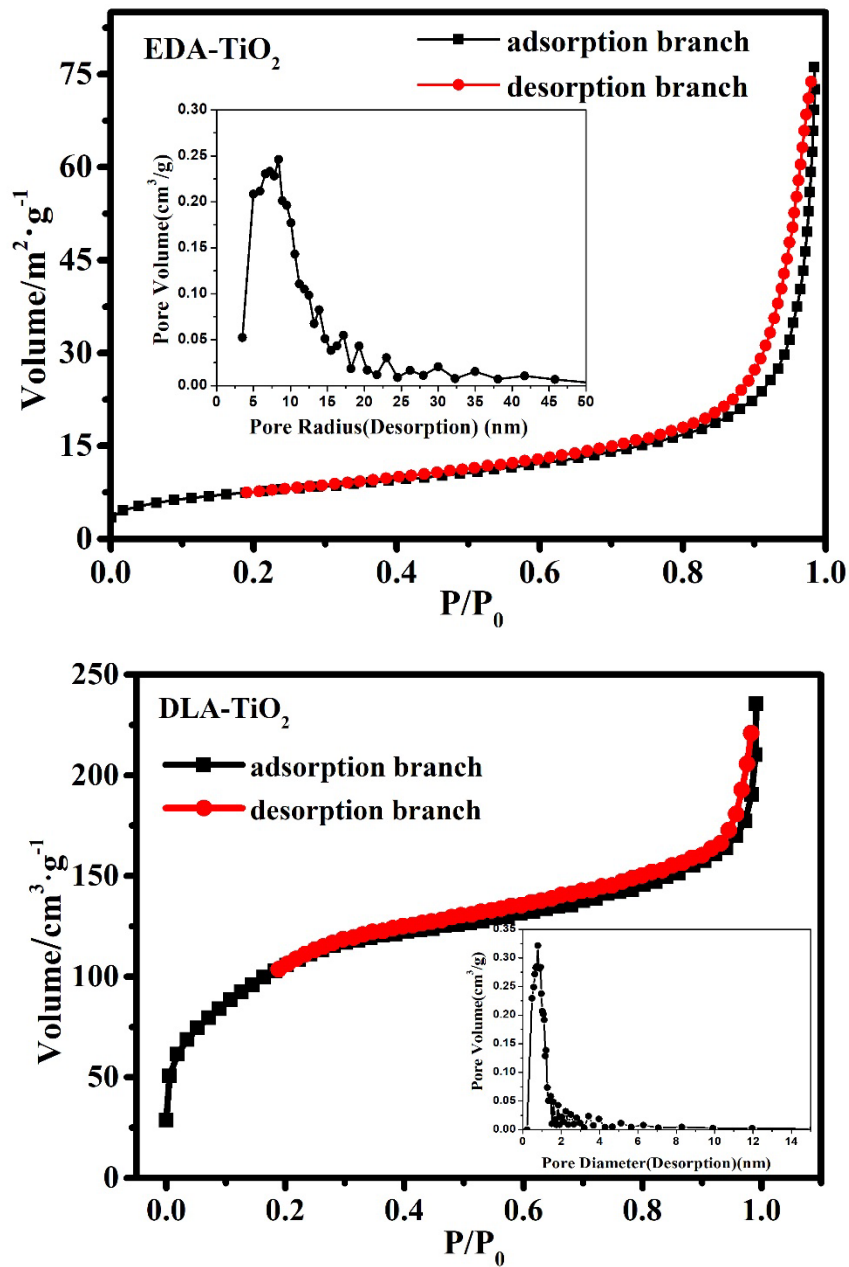
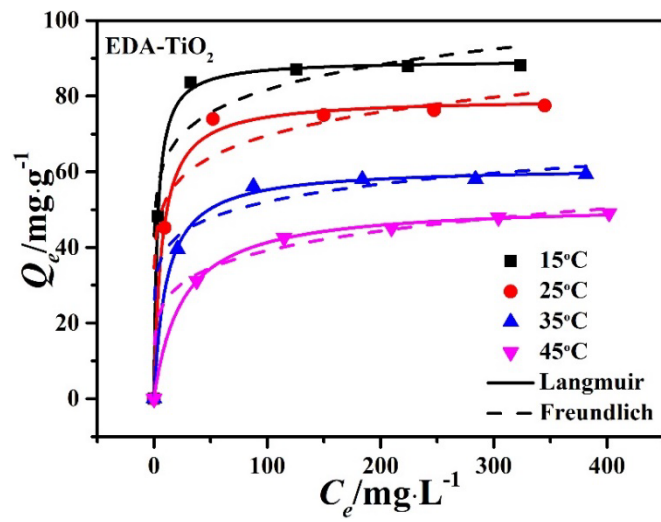
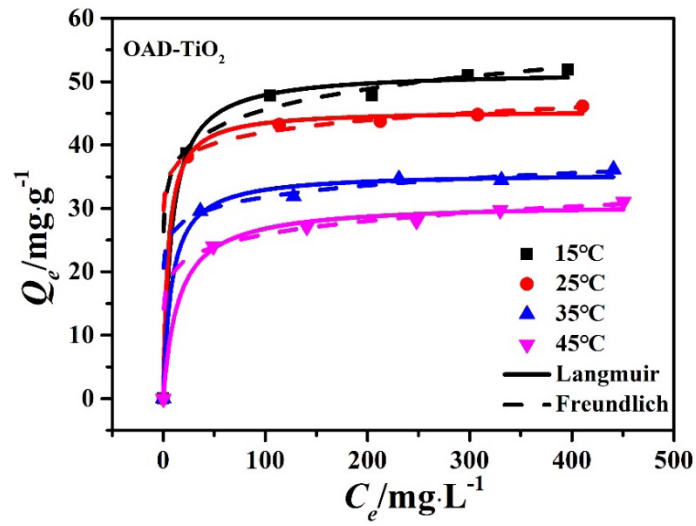
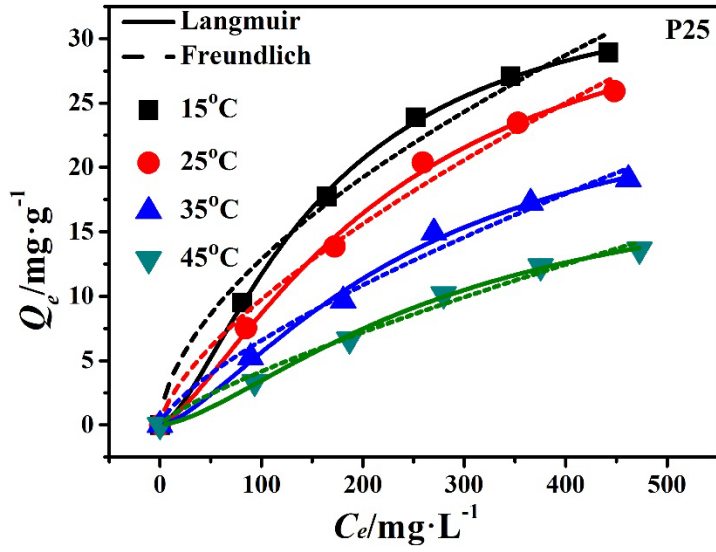


Figure S2. Nitrogen adsorption-desorption isotherms (Inset are the pore size distribution) of the TiO₂ samples.



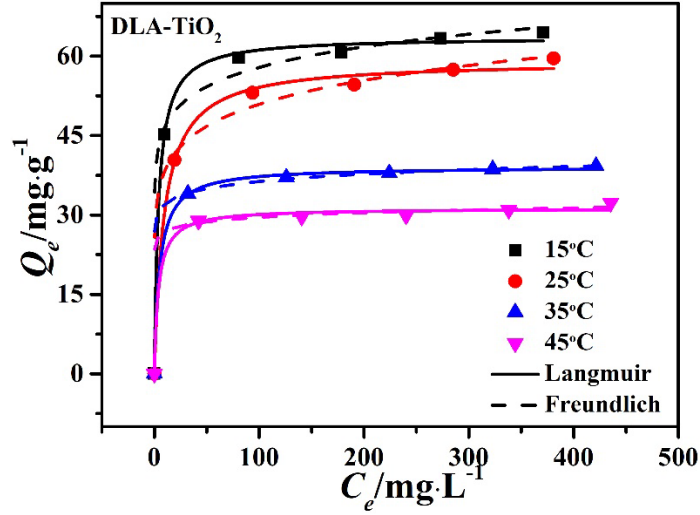


Figure S3. Adsorption isotherms for ARG adsorbed onto the TiO₂ samples at different temperature fitting with Langmuir and Freundlich models.

Table S1. Langmuir, and Freundlich isotherm parameters for ARG adsorbed onto the TiO₂ samples at different temperature.

Samples	Temp/°C	Langmuir model parameters			Freundlich model parameters		
		Q_m (mg/g)	K_L (L/mg)	R^2	K_F ((mg/g)/(mg/L) ⁿ)	$1/n$	R^2
P25	15	35.28	0.0049	0.9975	0.425	0.680	0.9645
	25	28.78	0.0047	0.9905	0.232	0.726	0.9611
	35	27.11	0.0032	0.9838	0.108	0.792	0.9707
	45	20.07	0.0020	0.9931	0.895	0.579	0.9456
OAD-TiO ₂	15	51.64	0.213	0.9963	28.96	0.10	0.9293
	25	48.11	0.128	0.9983	31.46	0.06	0.9627
	35	35.61	0.123	0.9943	22.00	0.08	0.9416
	45	30.86	0.066	0.9940	15.44	0.11	0.9722
EDA-TiO ₂	15	89.51	0.326	0.9991	48.85	0.11	0.7317
	25	78.15	0.148	0.9955	39.37	0.12	0.7130
	35	61.28	0.091	0.9982	29.53	0.12	0.7848
	45	51.65	0.040	0.9991	17.10	0.18	0.9320
DLA-TiO ₂	15	63.60	0.257	0.9975	37.64	0.09	0.9369
	25	59.07	0.250	0.9965	29.01	0.12	0.9484
	35	39.10	0.202	0.9991	28.28	0.05	0.9917
	45	31.26	0.109	0.9949	24.38	0.04	0.6866