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Electronic supplementary information

High-temperature and water-based evaporation induced self-assembly approach for facile and rapid synthesis of nanocrystalline mesoporous TiO_2

Wei Wang, Chengdong Ruan, Haibo Long, Guoqiang Liu, Song Li, Xinyan Yue, Hongqiang Ru

Table S1 Cell and window pore size distributions derived from BJH (cylindrical pore) and BDB (spherical pore) methods based on adsorption and desorption branches, respectively.

Samples	D-BJH_{ad}/nm	D-BJH_{de}/nm	D-BDB_{ad}/nm	D-BDB_{de}/nm
P0/450	5.4	4.2	5.2	3.9
P2/450	20.5	16.1	20.6	16.5
P4/450	25.4	15.9	26.8	15.9
P6/450	25.5	15.6	25.9	15.6
P0/550	8.9	4.5	8.7	4.2
P6/550	29.0	19.0	29.6	19.1

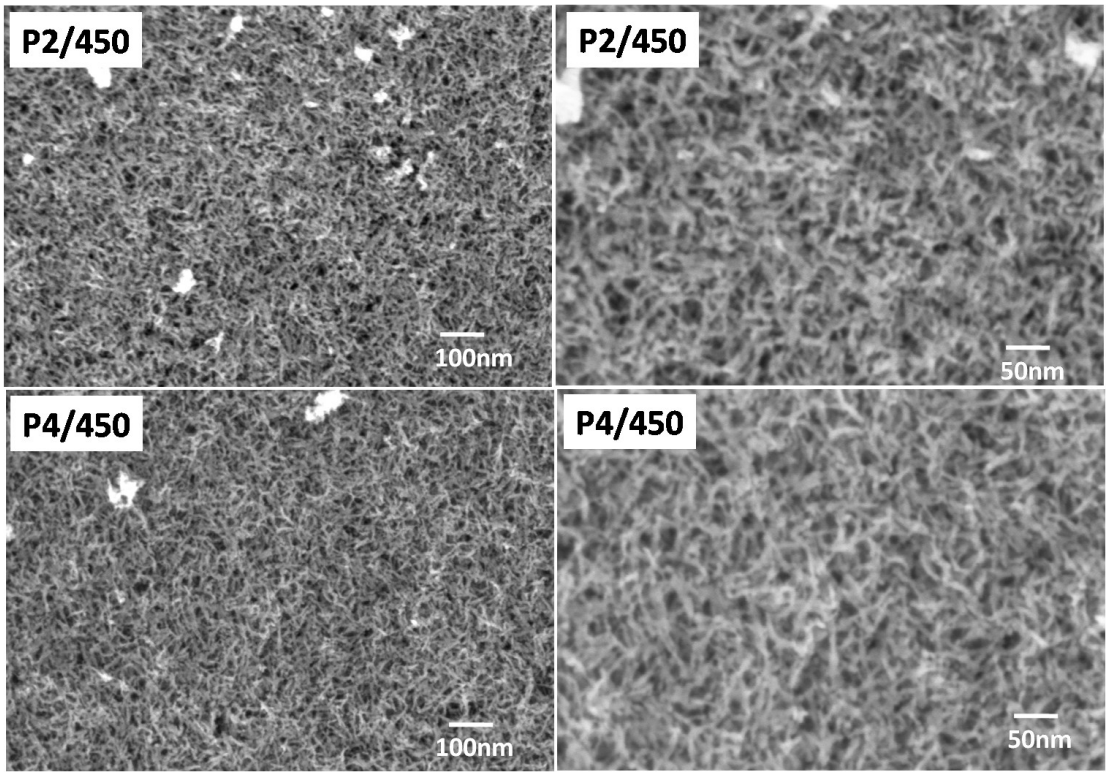


Fig. S1 FE-SEM images of P2/450 and P4/450 at different magnifications.

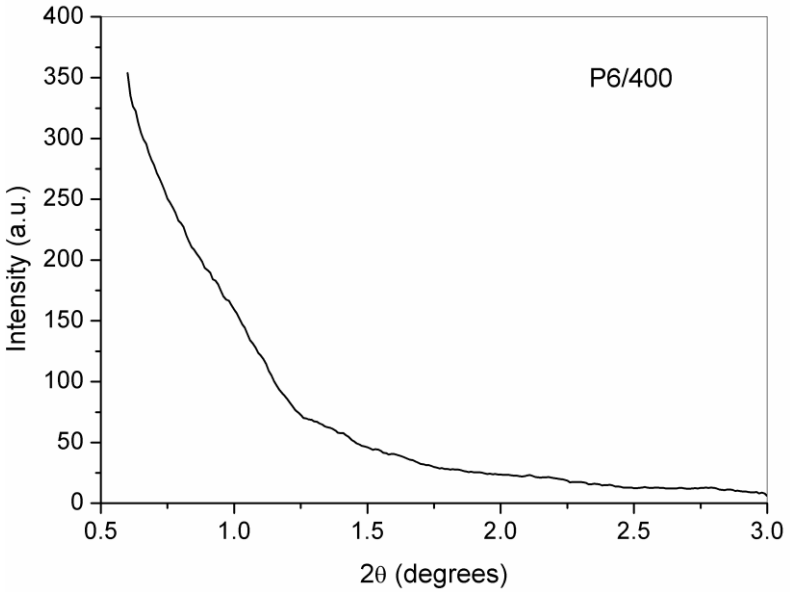
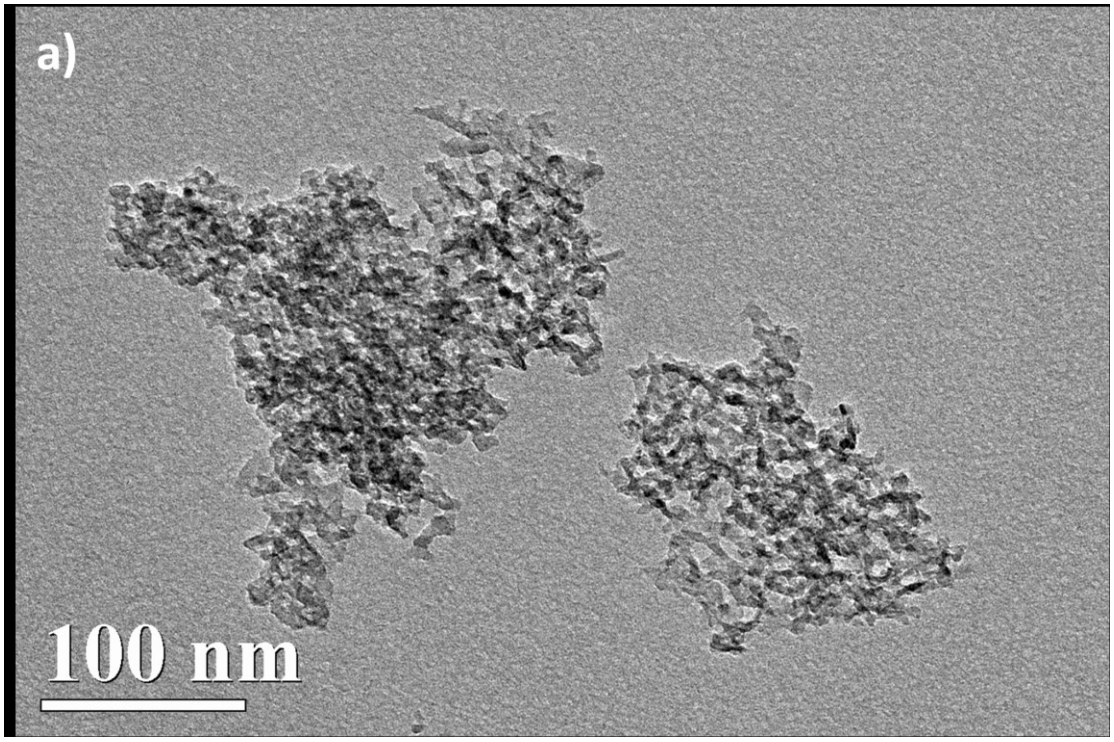


Fig.S2 low-angle XRD pattern of P6/400.



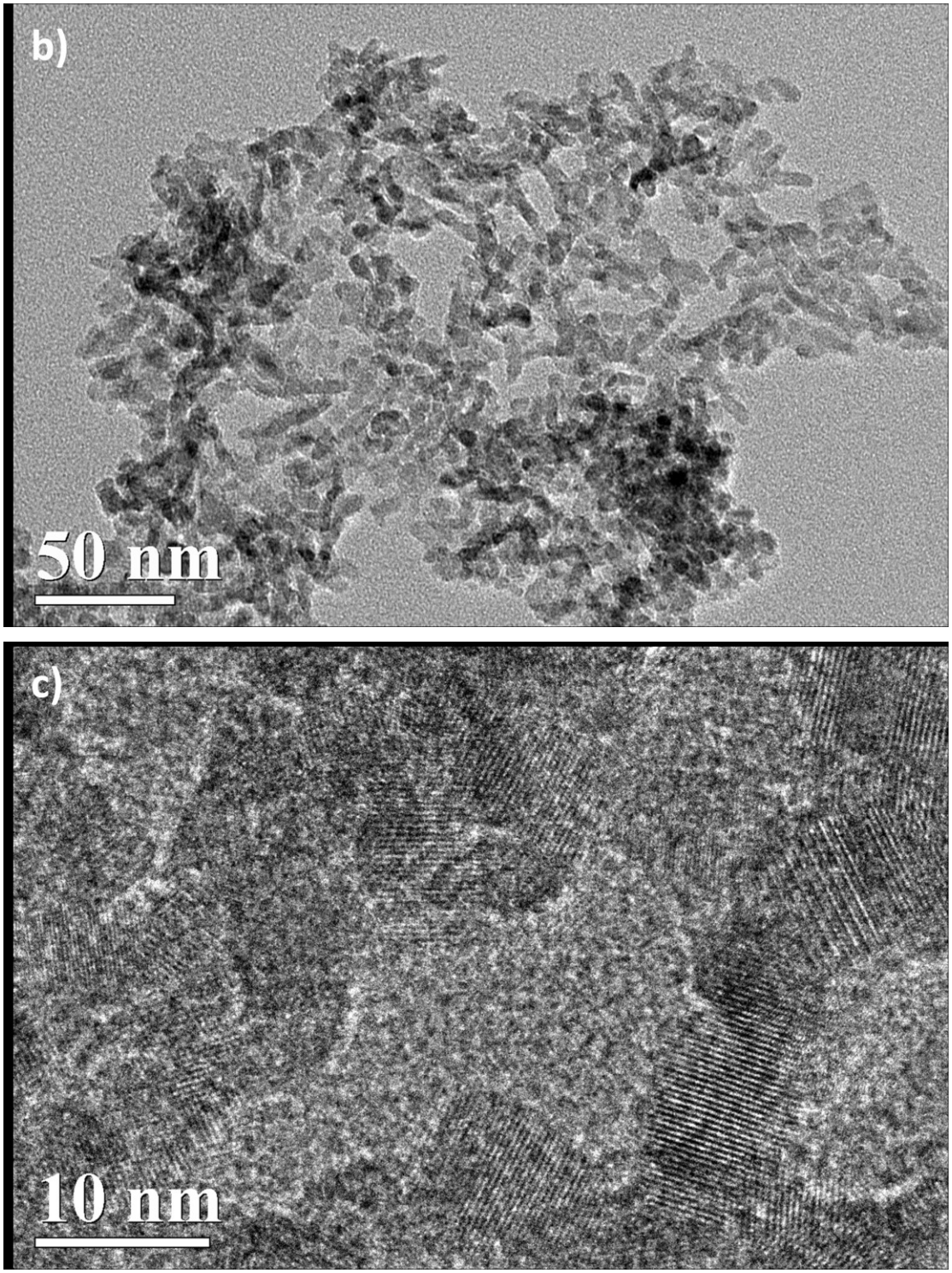


Fig.S3 (a-b)TEM and (c) HR-TEM images of P6/450.

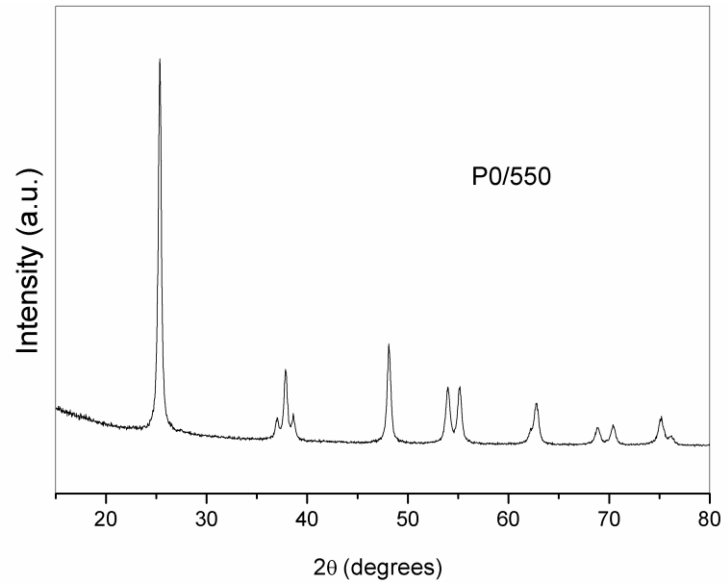


Fig. S4 Wdie-angle XRD pattern of P0/550, showing to be monocrystalline anatase.

Table S2 Properties of meso-TiO_2 obtained *via* HW-EISA[a)]

Samples	BET (m^2g^{-1})	V (cm^3g^{-1})	D_a (nm)	D_d (nm)
Brij-56	152	0.58	13.8	10.1
L64	158	0.64	19.7	12.4
F127	186	0.91	25.4	16.2
P6-450, based on P123	212	1.02	25.5	15.6

a: V is the total pore volume. D_a and D_d are the BJH pore size calculated based on adsorption and desorption branches, corresponding to the cell and window pore sizes respectively.

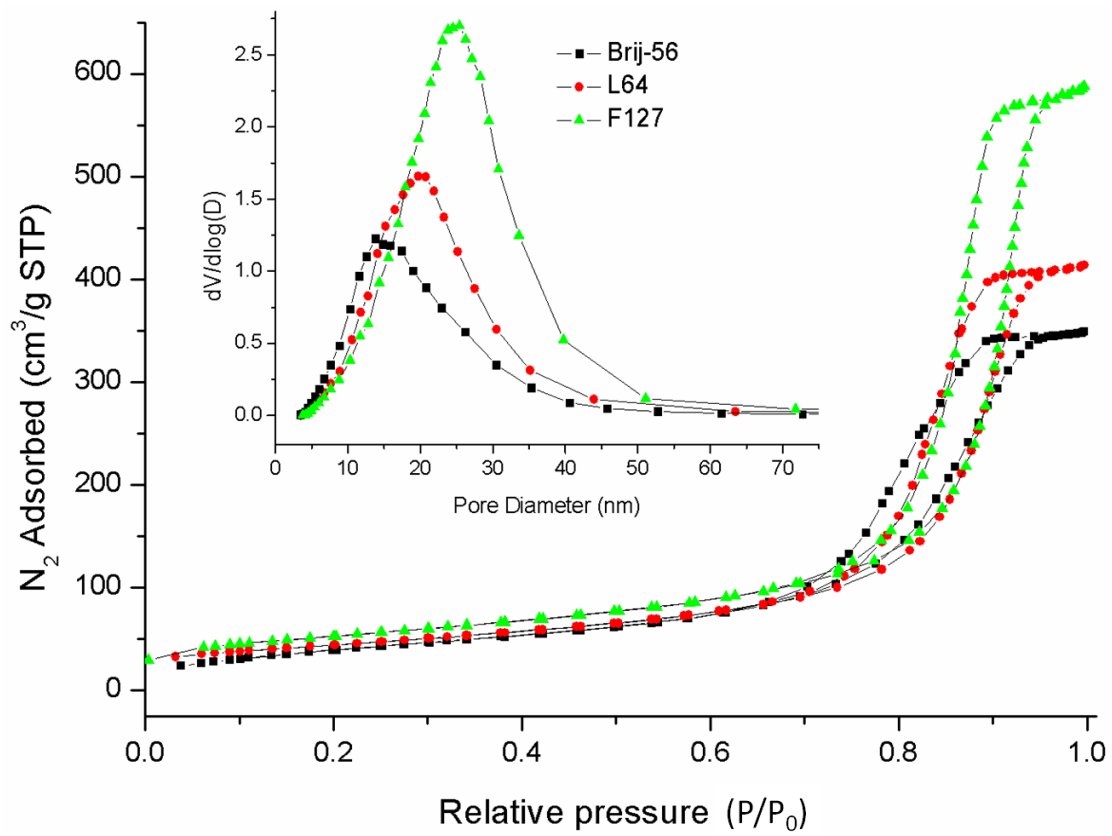


Fig. S5 N_2 sorption results of 450°C calcined meso-TiO_2 templated by different surfactants: Brij-56, L64 and F127 under the same conditions as those of P6-450 that is based on P123, which re-appears here for comparison purpose only.

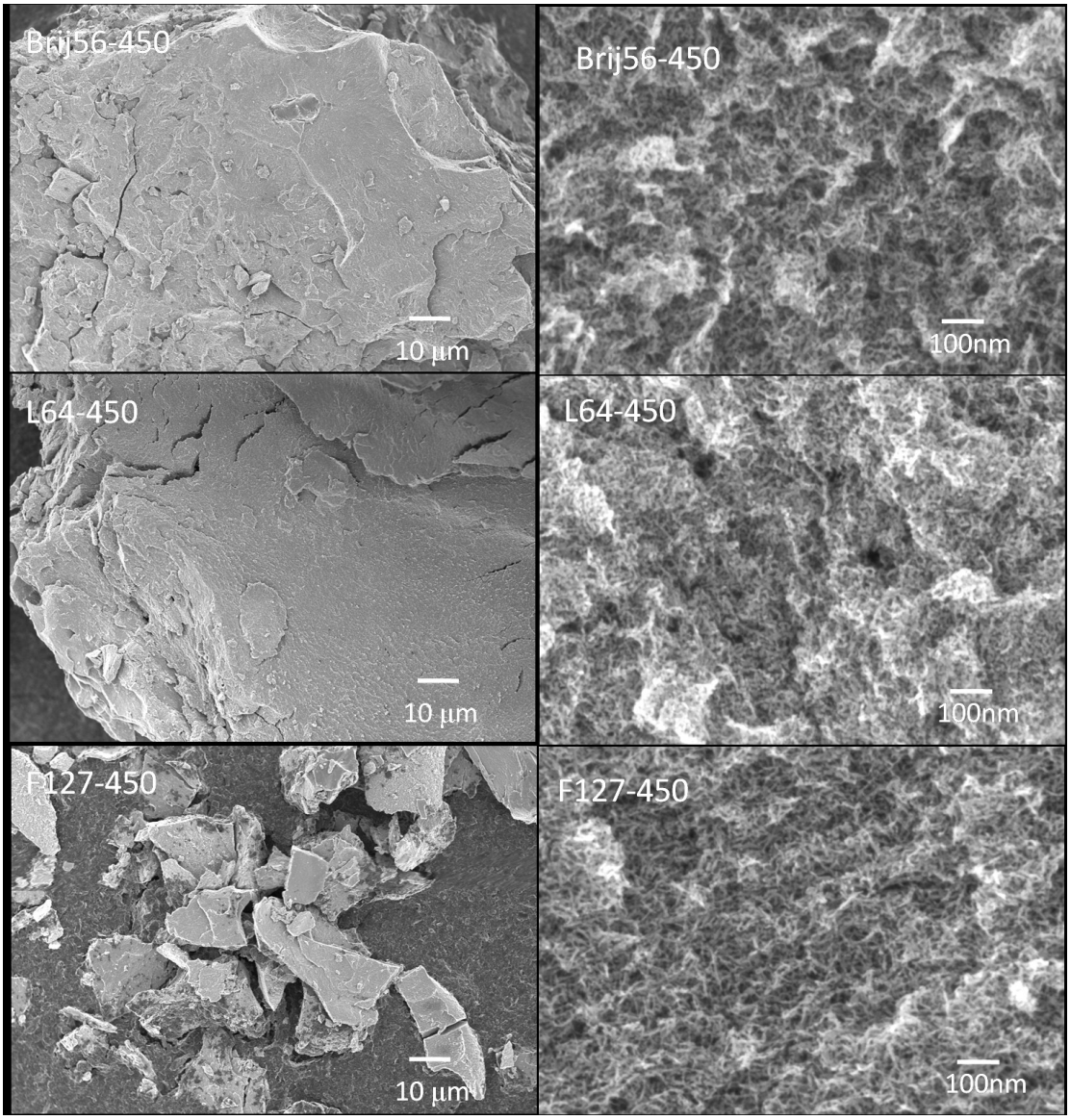


Fig. S6 FE-SEM images at different magnifications of 450°C calcined meso-TiO_2 templated by different surfactants: Brij-56, L64 and F127 under the same conditions as those of P6-450 that is based on P123.

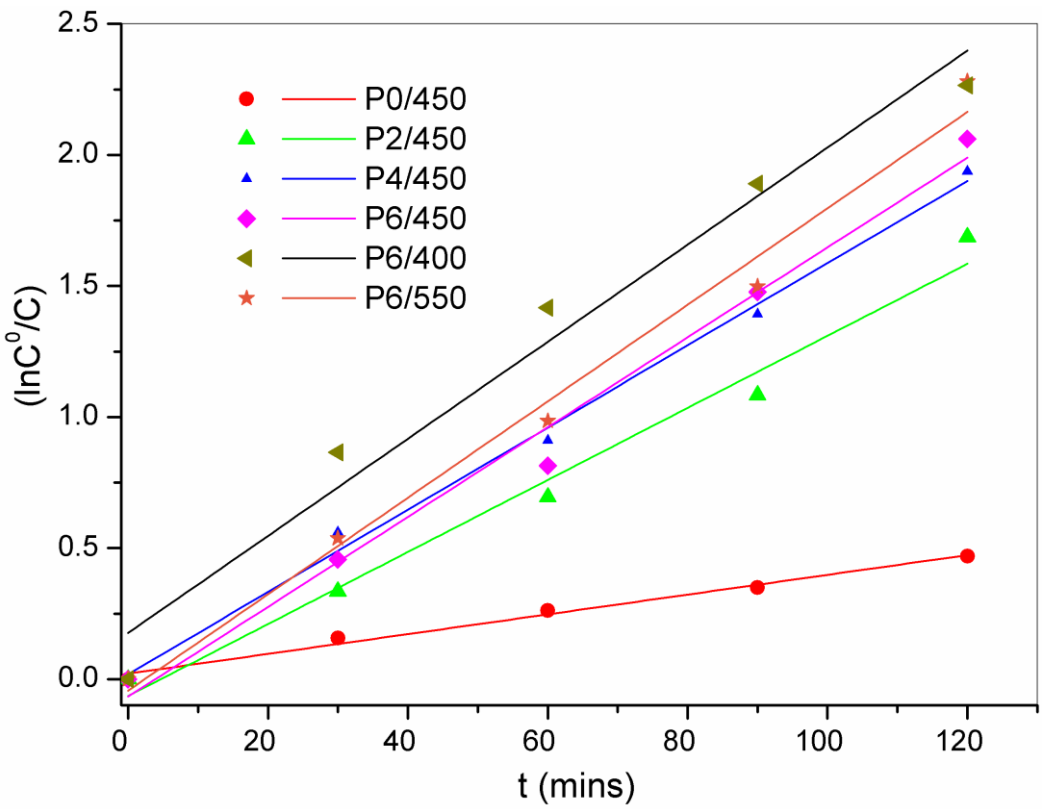


Fig. S7 Pseudo first-order rate constant determined from the linear graph of ln(C^o/C) versus time.

Table S3 Kinetic parameters of meso-TiO_2 for photo-degradation of RhB [a]

Samples	Degradation percentage *(%)*	k (min^{-1})	$k_s \times 10^4$ ($g \cdot m^{-2} min^{-1}$)
P0/450	37%	0.0038	0.44
P2/450	82%	0.0137	0.75
P4/450	86%	0.0157	0.80
P6/450	87%	0.0171	0.81
P6/550	90%	0.0184	1.29
P6/400	90%	0.0185	0.79

a: Degradation percentage is the C/C^0 after irradiation time of 2 hrs. The k is the rate contant derived from the slope of a linear fit to the equation of $\ln(C^0/C) = kt$. The k_s is the rate constants normalized to corresponding surface areas of the samples.