Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Supporting Information

Ordered Mesoporous TiO_2 with Exposed (001) Facets and Enhanced Activity in Photocatalytic Selective Oxidation of Alcohols

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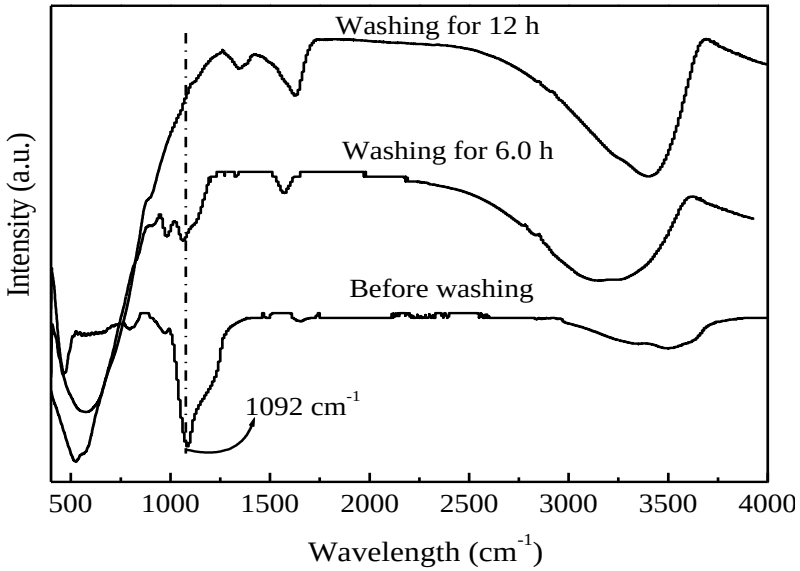


Figure S1 FTIR spectra of TiO_2/KIT-6 composites after being washed in 100 mL 2.0 M NaOH aqueous solution for different time.

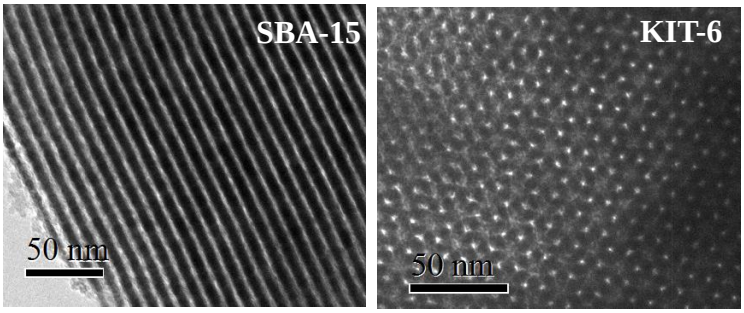


Figure S2 TEM images of SBA-15 and KIT-6.

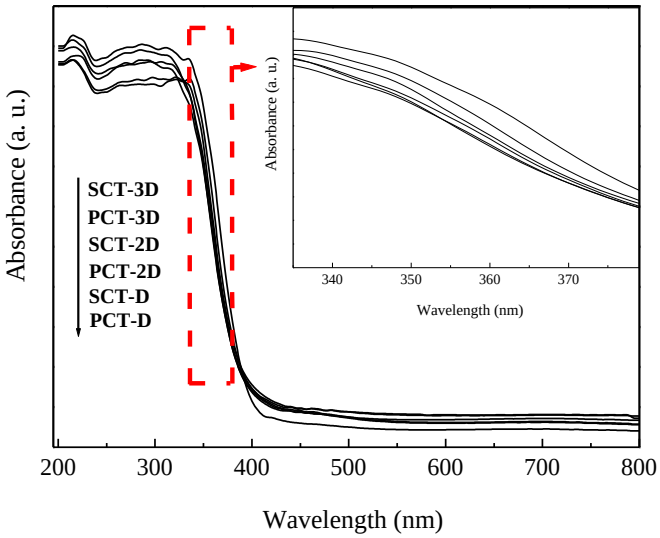
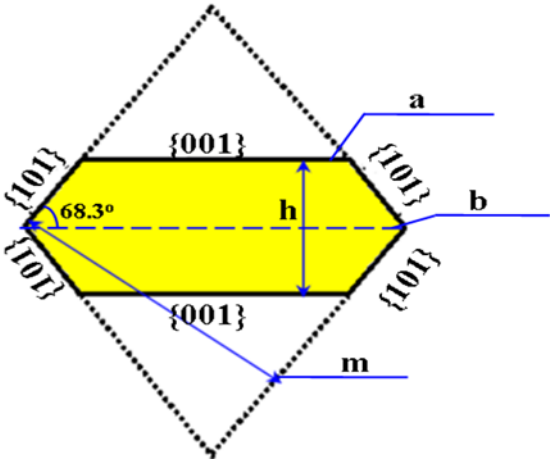
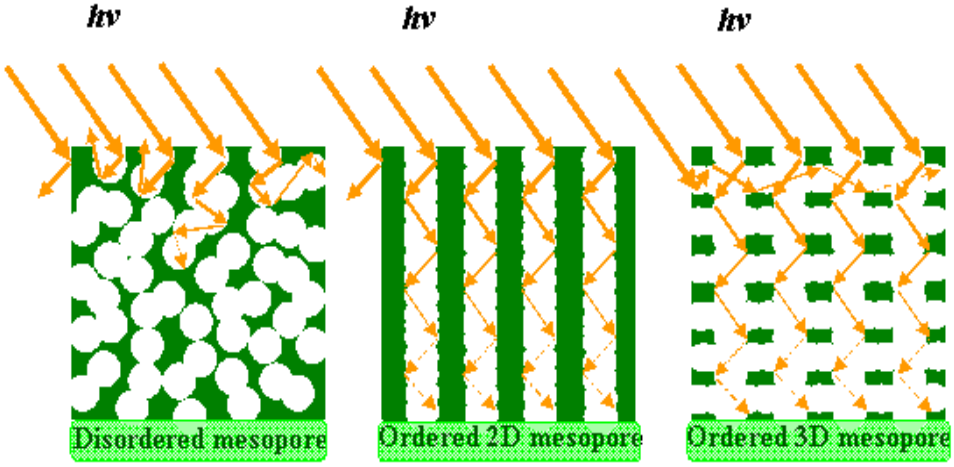


Figure S3 UV-vis DRS spectra of different TiO_2 samples. The inset is the magnified UV-vis DRS spectra from 335 to 380 nm.



Scheme S1 Model illustrating the formation of exposed (001) facets in anatase TiO_2 crystal through deformation growth from octahedron to decahedron.



Scheme S2 Schematic illustration of light multiple reflections in disordered, ordered 2D and ordered 3D mesoporous channels.

Table S1 The physical structure parameters of SBA-15 and KIT-6.

Sample	S_{BET} (m^2/g)	V_P (cm^3/g)	D_P (nm)
SBA-15	773	0.99	6.3
KIT-6	707	1.1	6.3

Table S2 Activities and selectivities of different TiO_2 photocatalysts in oxidation of various alcohols to their corresponding aldehydes.

Reactant	Conversion (%)						Selectivity (%)					
	PCT-D	SCT-D	PCT-2D	SCT-2D	PCT-3D	SCT-3D	PCT-D	SCT-D	PCT-2D	SCT-2D	PCT-3D	SCT-3D
Benzyl alcohol	25	36	35	45	40	51	95	95	95	97	96	99
2-phenylethanol	18	25	21	31	26	38	91	94	91	96	94	98
3-phenylpropanol	15	20	19	27	25	34	92	95	93	98	96	99
Hexanol	21	29	24	32	27	35	89	96	95	97	96	99
Trans-2-hexen-1-ol	30	40	40	54	50	70	100	100	100	100	100	100