

†Electronic Supplementary Information

**Morphological Variation of Anatase TiO₂ Crystals *via* Forming
Titanium Glycerolate Precursors under Microwave Irradiation**

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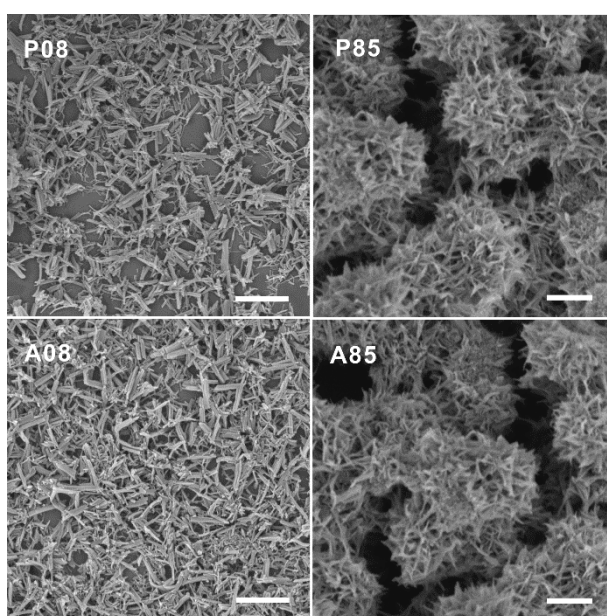


Fig. S1 SEM images of indicated titanium glycerolate (top) and anatase TiO₂ crystals (bottom). Each scale bar indicates 1 μm.

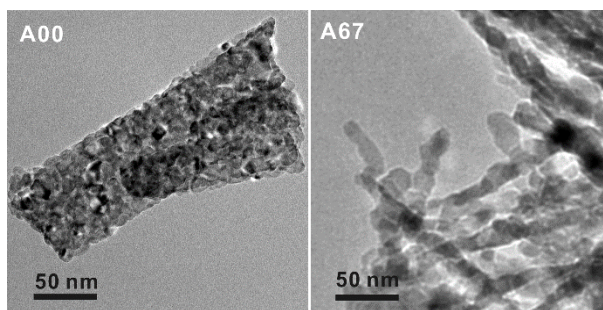


Fig. S2 TEM images of indicated anatase TiO₂ crystals.

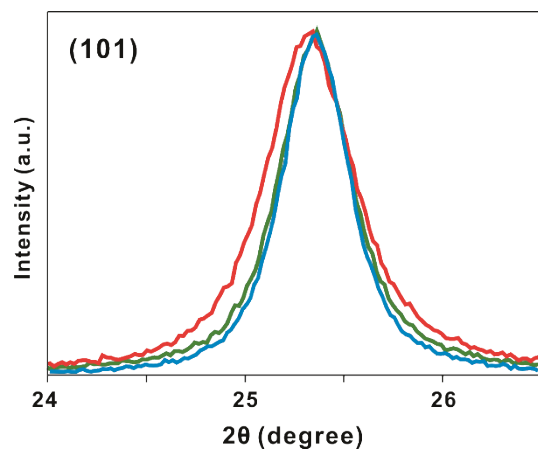


Fig. S3 Maximum-normalized (101) HRXRD peaks of anatase TiO_2 crystals A00 (red), A20 (green), and A67 (blue).

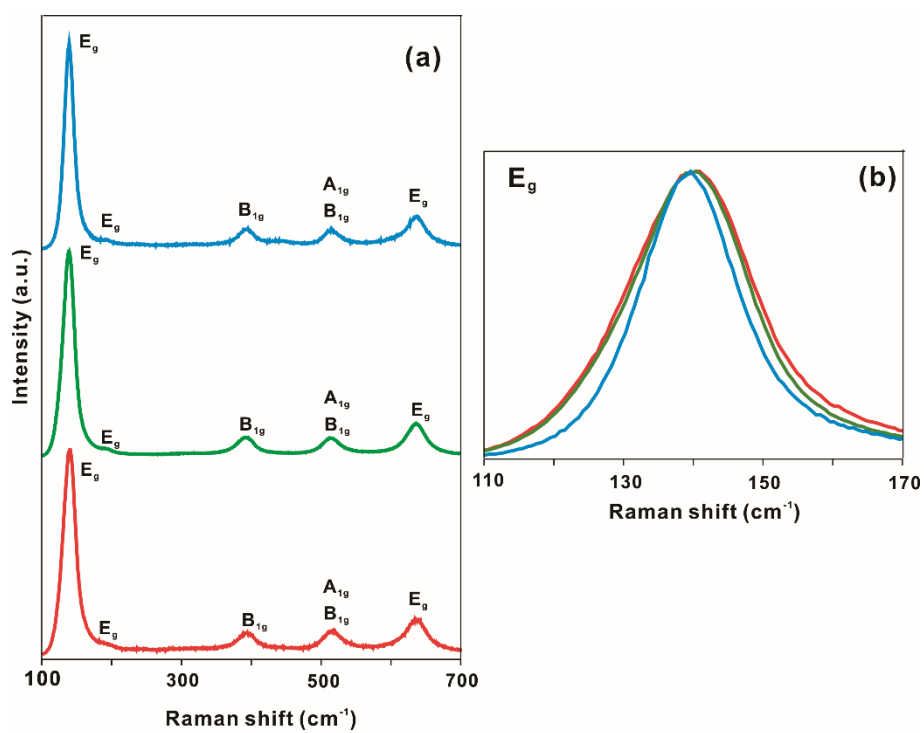


Fig. S4 Raman spectra (a) and maximum-normalized lowest- E_g Raman peaks (b) for the anatase TiO_2 crystals of A00 (red), A20 (green), and A67 (blue).

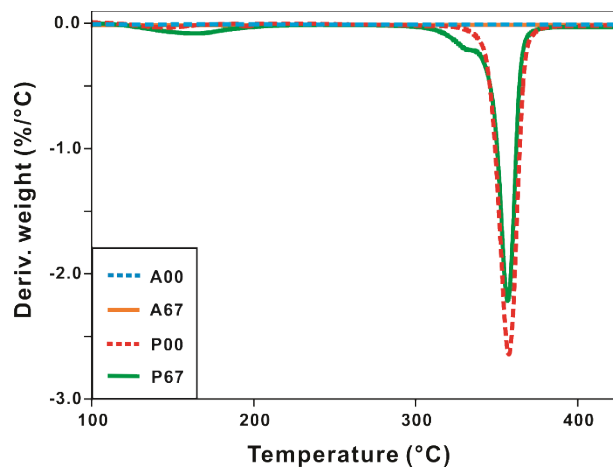


Fig. S5 First-derivative TGA curves of indicated titanium glycerolate precursors and anatase TiO₂ crystals.

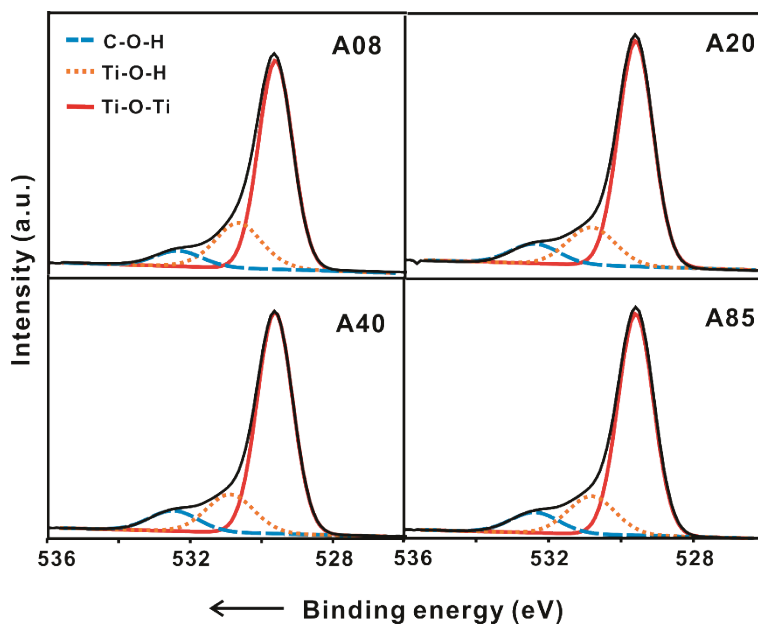


Fig. S6 O 1s XPS spectra of indicated anatase TiO₂ crystals. Each XPS spectrum has been deconvoluted into three Gaussian curves arising from indicated oxygen environments.

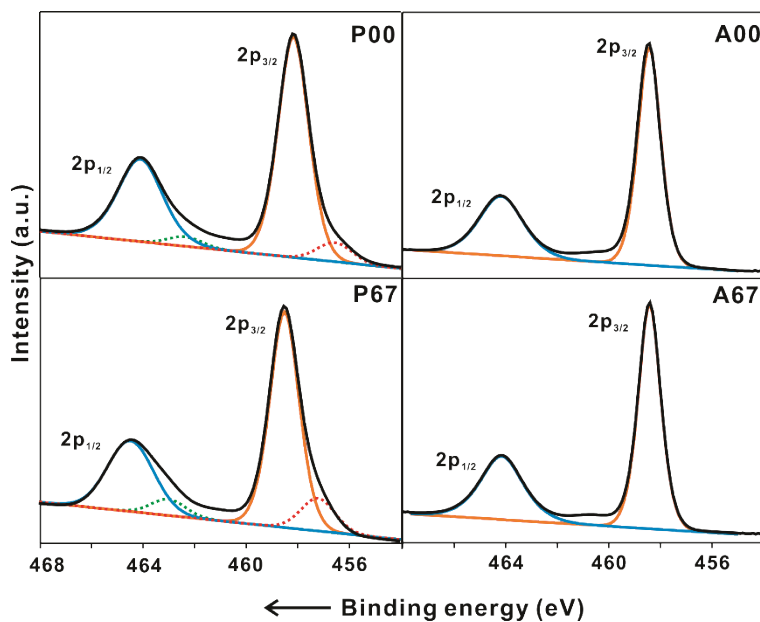


Fig. S7 Ti 2p XPS spectra of indicated titanium glycerolate precursors (left) and anatase TiO₂ crystals (right). Each XPS spectrum has been deconvoluted into Gaussian curves of Ti⁴⁺ (solid) and Ti³⁺ (dotted).

Table S1 Binding Energies in eV for the Overall and the Deconvoluted Curves of O 1s XPS Spectra

sample	overall	C-O-H	Ti-O-C	Ti-O-H	Ti-O-Ti
P00	531.0	532.5 (15%) ^a	531.0 (80%)	- ^b	529.8 (5%)
P67	531.4	532.8 (14%)	531.5 (68%)	530.8 (10%)	529.7 (8%)
A00	529.7	532.4 (7%)	-	530.7 (22%)	529.7 (71%)
A08	529.7	532.5 (8%)	-	530.9 (18%)	529.7 (74%)
A20	529.7	532.5 (8%)	-	530.9 (18%)	529.7 (74%)
A40	529.7	532.5 (8%)	-	530.9 (18%)	529.7 (74%)
A67	529.7	532.5 (9%)	-	530.9 (17%)	529.7 (74%)
A85	529.7	532.5 (9%)	-	530.9 (17%)	529.7 (74%)

^aArea percentage of each peak. ^bNot observed.

Table S2 Binding Energies in eV for the Deconvoluted Curves of Ti 2p XPS Spectra

sample	Ti ⁴⁺ 2p _{1/2}	Ti ³⁺ 2p _{1/2}	Ti ⁴⁺ 2p _{3/2}	Ti ³⁺ 2p _{3/2}	f(Ti ³⁺) ^a
P00	464.1 ^a	462.4	458.2	456.6	0.08
P67	464.6	463.1	458.6	457.3	0.15
A00	464.1	- ^b	458.4	-	0.00
A67	464.1	-	458.4	-	0.00

^aFraction of Ti³⁺ peaks. ^bNot observed.

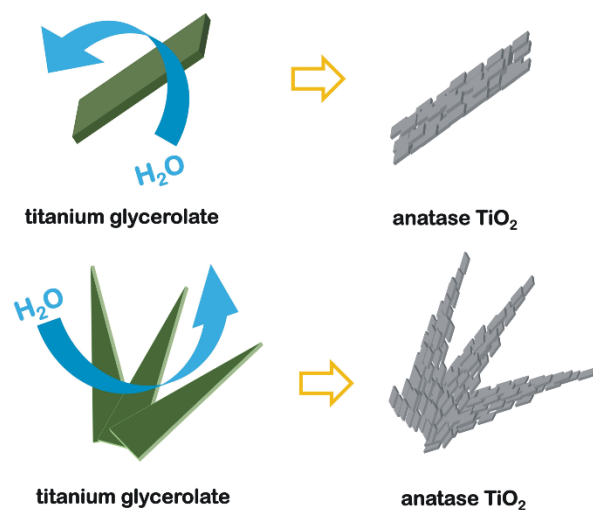


Fig. S8 Schematic illustration for the conversion of indicated titanium glycerolate precursors to anatase TiO₂ crystals *via* microwave-assisted hydrolysis.