Supplementary Information:

**Factors Affecting Oxygen Evolution through Water Oxidation on Polycrystalline Titanium Dioxide**

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Fig. S1 Emission spectrum of super-high-pressure Hg lamp through a U330 bandpass filter.

Fig. S2 Pore size distributions of (a) TiO$_2$-D and (b) TiO$_2$-ND calcined at 200–600°C for 2 hours.
Fig. S3 Zeta potential of TiO$_2$ nanocolloid as a function of pH value.

Fig. S4 XRD patterns of TiO$_2$-D calcined at (a) 200–500°C and (b) 600–900°C for 2 hours.
Fig. S5 XRD patterns of TiO$_2$-ND calcined at (a) 200–500°C and (b) 600–900°C for 2 hours.

Fig. S6 TG and DTA curves for (a) TiO$_2$-D and (b) TiO$_2$-ND calcined at 200°C for 2 hours.
**Fig. S7** Time courses of O$_2$ evolution from 0.001–0.01 mol L$^{-1}$ AgNO$_3$ solution on TiO$_2$-ND calcined at 800°C for 2 hours under UV light irradiation.

**Fig. S8** Crystalline phase composition of (a) TiO$_2$-D and (b) TiO$_2$-ND calcined 200–900°C for 10 hours. (Red: anatase, green: brookite, blue: rutile.)
Fig. S9 Relationships between $D_{av}$ and O$_2$ evolution rate on TiO$_2$-D and TiO$_2$-ND calcined at 200–900°C for 2 or 10 hours.