

supplementary

Figure S1: XRD patterns of TiO₂-500 for the cycling stability test of photocatalytic degradation of RhB under the simulated solar light illumination.

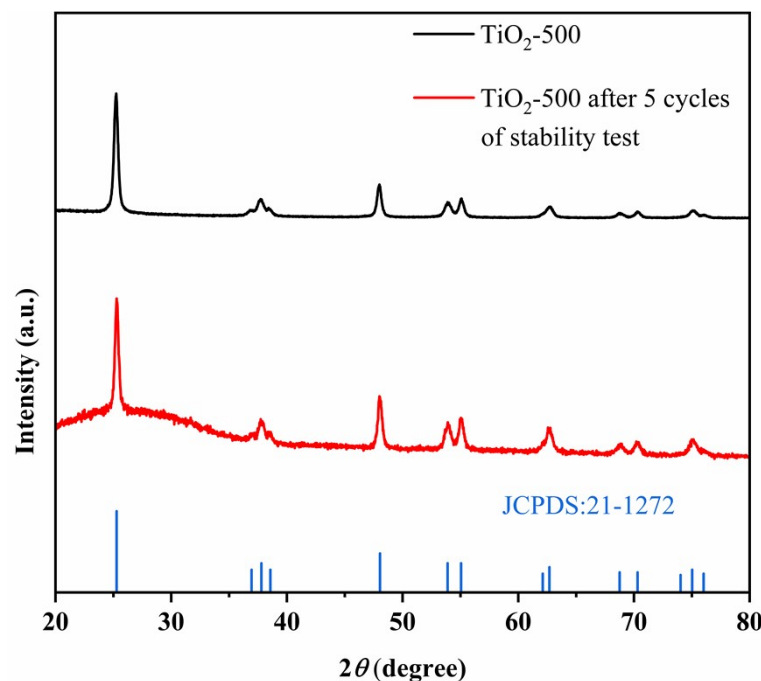


Table S1: XRD parameters and the calculated particles size of hydrogenated TiO₂ by Scherrer formula

sample	TiO ₂ -400	TiO ₂ -500	TiO ₂ -600	TiO ₂ -700	TiO ₂ -800
FWHM (°)	0.340	0.398	0.398	0.353	0.322
2θ (°)	25.34	25.24	25.22	25.30	25.44
Particles Size (nm)	45	45	46	46	48

Table S2: Oxidation state components of O 1s and Ti 2p_{3/2} derived from the peak-fitting of XPS data (Figure 4).

peak Area (%)		TiO ₂ -400	TiO ₂ -500	TiO ₂ -600
O 1s	Ti-O-Ti	19316.89 (75.6%)	19910.43 (73.4%)	13388.91 (64%)
	VO	4995.54 (19.4%)	5667.51 (20.8%)	5315.29 (25.3%)
	Ti-OH	1365.36 (5.3%)	1582.84 (5.8%)	2241.76 (10.7%)
Ti 2p _{3/2}	Ti ⁴⁺	16637.14 (96.9%)	17208.21 (96.1%)	11623.92 (95.8%)
	Ti ³⁺	537.51 (3.1%)	699.29 (3.9%)	514.54 (4.2%)

C 1s	sp ³	10695.97 (72.7%)	8959.79 (77.4%)	11829.87 (69.6%)
	sp ²	1445.77 (9.83%)	1022.14 (8.8%)	1620.93 (9.5%)
	C-O	2037.22 (13.9%)	1223.39 (10.6%)	2899.02 (17.1%)
	C=O	532.35 (3.6%)	364.27 (3.1%)	638.42 (3.8%)