

Electronic Supplementary Material:

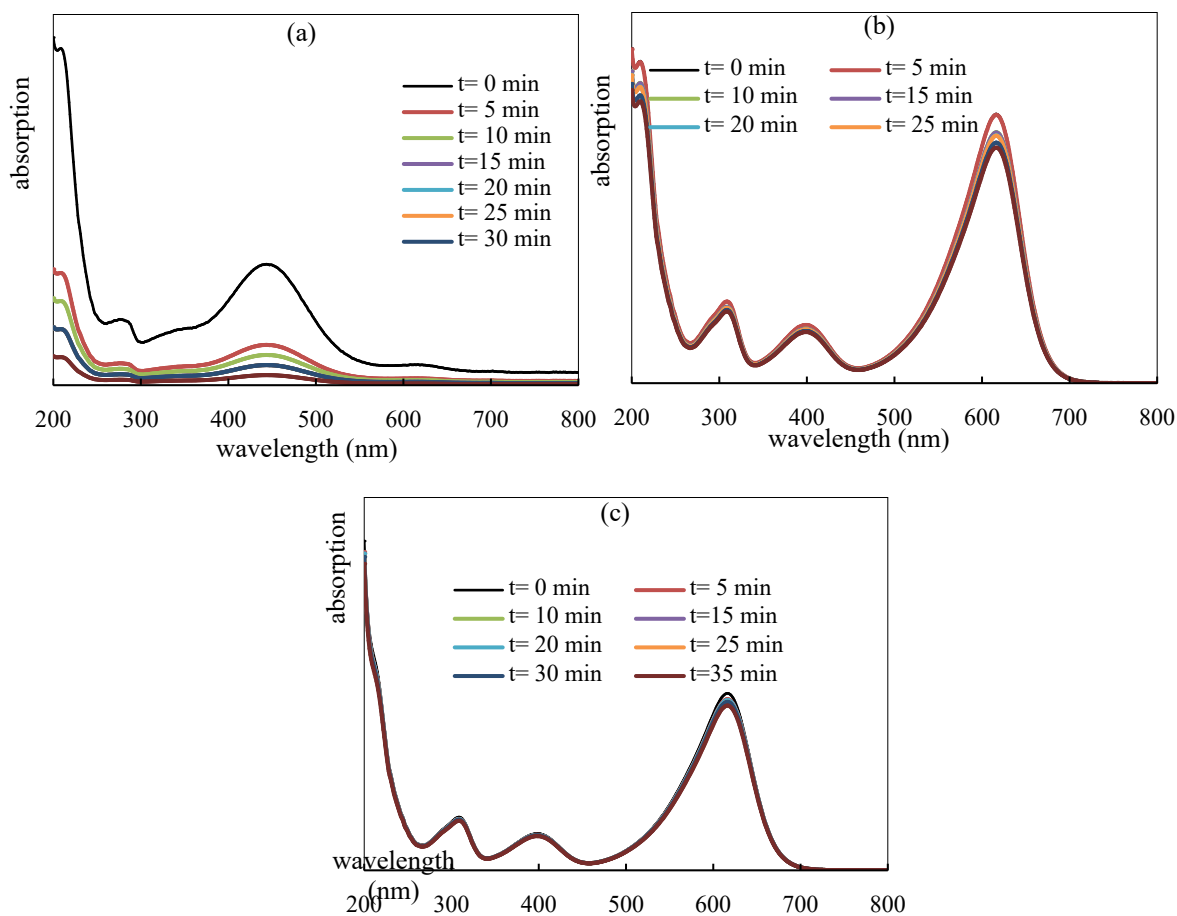


Fig. S1. Representative UV–Vis spectra of BCG dye during photocatalytic degradation at (a) pH 3, (b) pH 7, and (c) pH 11.

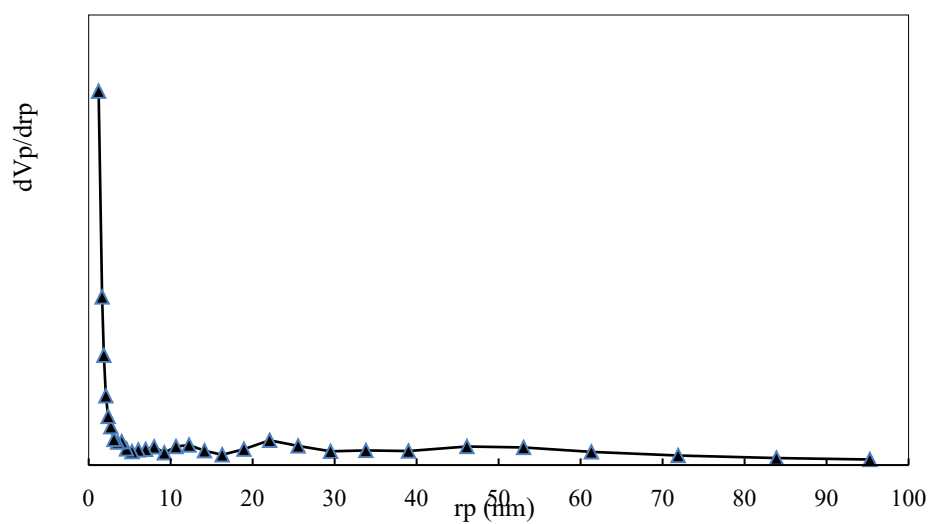


Fig. S2. BJH pore size distribution: pore volume (dV_p/dr_p) vs. pore diameter (nm) for BTCZH_x catalyst.

Table S1. Mean photocatalytic degradation efficiencies ($\pm$ standard deviation) of BCG over BTCZH5, BTCZH10, and BTCZH20 catalysts at different pH values, calculated from three independent experimental runs.

t (min)	BTCZH5	BTCZH10	BTCZH20
pH=3			
5	14.57 $\pm$ 0.51	86.13 $\pm$ 3.01	83.33 $\pm$ 2.92
10	29.65 $\pm$ 1.04	86.72 $\pm$ 3.04	87.50 $\pm$ 3.06
15	38.19 $\pm$ 1.34	87.30 $\pm$ 3.06	91.67 $\pm$ 3.21
20	51.26 $\pm$ 1.79	89.45 $\pm$ 3.13	91.67 $\pm$ 3.21
25	51.76 $\pm$ 1.81	89.65 $\pm$ 3.14	91.67 $\pm$ 3.21
30	71.86 $\pm$ 2.52	91.41 $\pm$ 3.20	91.67 $\pm$ 3.21
35	75.38 $\pm$ 2.64	91.41 $\pm$ 3.20	95.83 $\pm$ 3.35
pH=7			
5	7.64 $\pm$ 0.27	30.52 $\pm$ 1.07	0.29 $\pm$ 0.01
10	29.36 $\pm$ 1.03	50.70 $\pm$ 1.77	6.73 $\pm$ 0.24
15	45.32 $\pm$ 1.59	61.04 $\pm$ 2.14	6.88 $\pm$ 0.24
20	68.67 $\pm$ 2.40	72.26 $\pm$ 2.53	7.88 $\pm$ 0.28
25	88.92 $\pm$ 3.11	84.01 $\pm$ 2.94	8.02 $\pm$ 0.28
30	97.54 $\pm$ 3.41	98.78 $\pm$ 3.46	10.60 $\pm$ 0.37
35	98.52 $\pm$ 3.45	99.48 $\pm$ 3.48	12.46 $\pm$ 0.44
pH=11			
5	1.38 $\pm$ 0.05	3.99 $\pm$ 0.14	3.31 $\pm$ 0.12
10	2.08 $\pm$ 0.07	4.15 $\pm$ 0.14	3.76 $\pm$ 0.13
15	3.23 $\pm$ 0.11	4.31 $\pm$ 0.15	3.76 $\pm$ 0.13
20	4.16 $\pm$ 0.15	4.46 $\pm$ 0.16	3.91 $\pm$ 0.14
25	5.31 $\pm$ 0.19	5.42 $\pm$ 0.19	4.81 $\pm$ 0.17
30	5.54 $\pm$ 0.19	5.58 $\pm$ 0.20	4.81 $\pm$ 0.17
35	8.54 $\pm$ 0.30	6.22 $\pm$ 0.22	6.92 $\pm$ 0.24