Supplementary Material

A novel cobalt doped MOFs-based photocatalyst with great applicability as an efficient mediator of peroxydisulfate activation for enhanced degradation of organic pollutants

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Analytical method

The measuring methods for other organic pollutants were as follows: At given intervals, a certain amount of solution was collected and centrifuged at 8000×g for 10 min. Then, as-obtained suspension was diluted and filtered via 0.22 μm filter membrane. The concentrations of OFX, DCF, TC and SME were determined using a UV-vis spectrophotometer (Hitachi U-3900) at 286, 276, 358, and 264 nm, respectively. The standard curves established were shown in Fig. S9. In addition, the organic dye solutions do not need to be filtered before determination. And the concentrations were monitored using a UV-vis spectrophotometer according to the chromatometry.

Kinetics study

The kinetics of Co-doped MIL-53-NH_2 was explored using the pseudo-first-order kinetics. The kinetic equation for the reaction can be expressed as:

$$-ln(\frac{C_t}{C_0}) = kt \quad (1)$$

where k is the apparent rate constant; t is the reaction time; C_0 and C_t are the initial concentration of target object and the concentration of target object at time t, respectively.

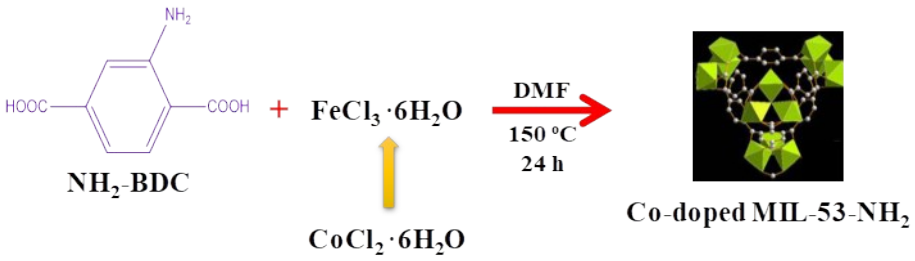

Fig. S1. Schematic illustration of the synthesis of Co-doped MIL-53-NH_2.

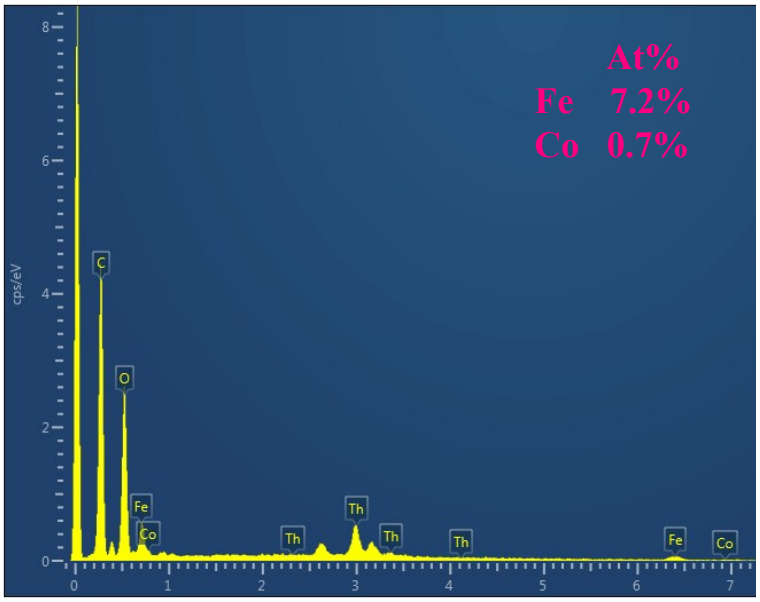

Fig. S2. EDX spectra of Co-doped MIL-53-NH_2 (Fe:Co 4:1)

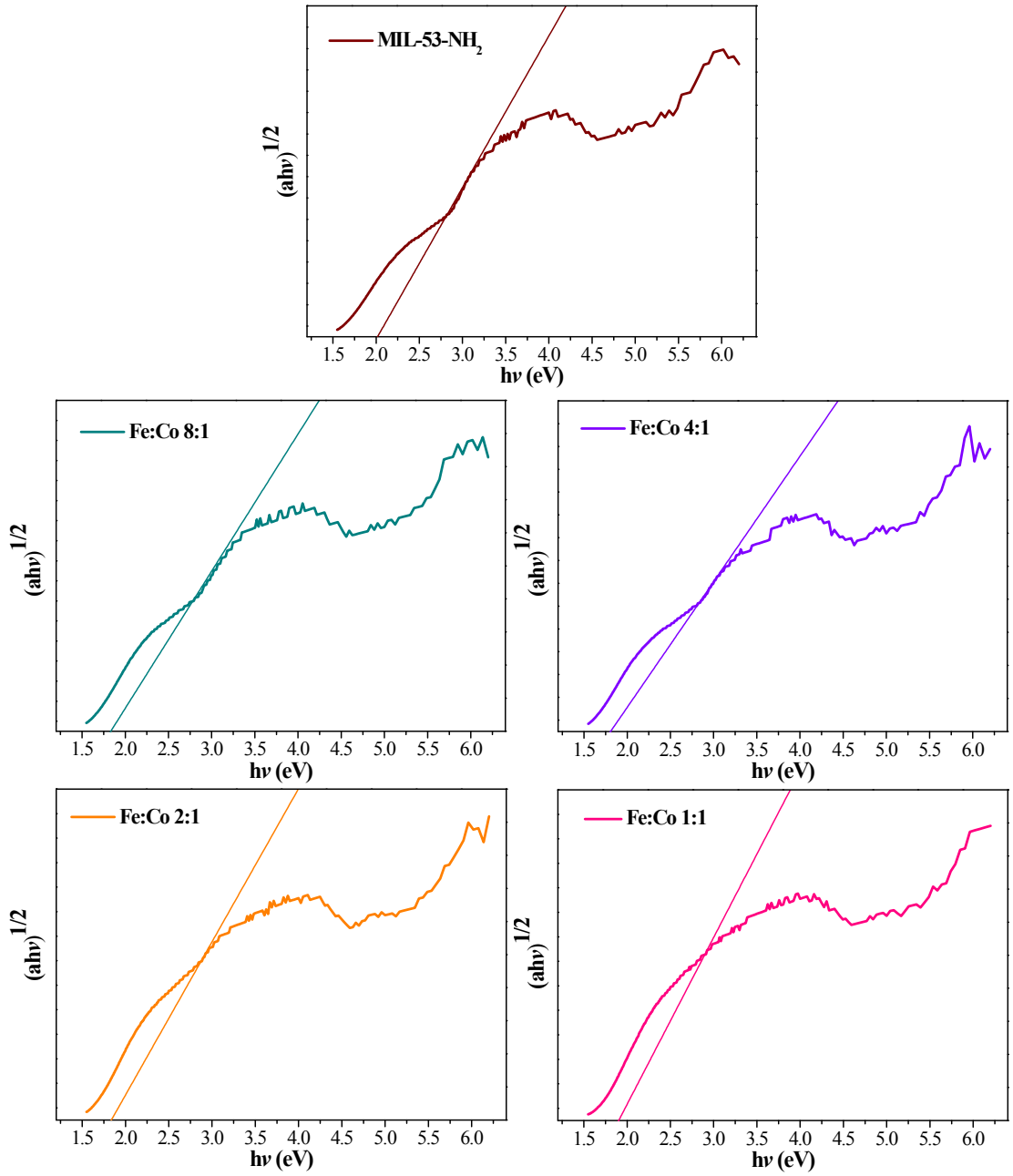

Fig. S3. The relationship of $(\alpha h\nu)^{1/2}$ vs. hν.

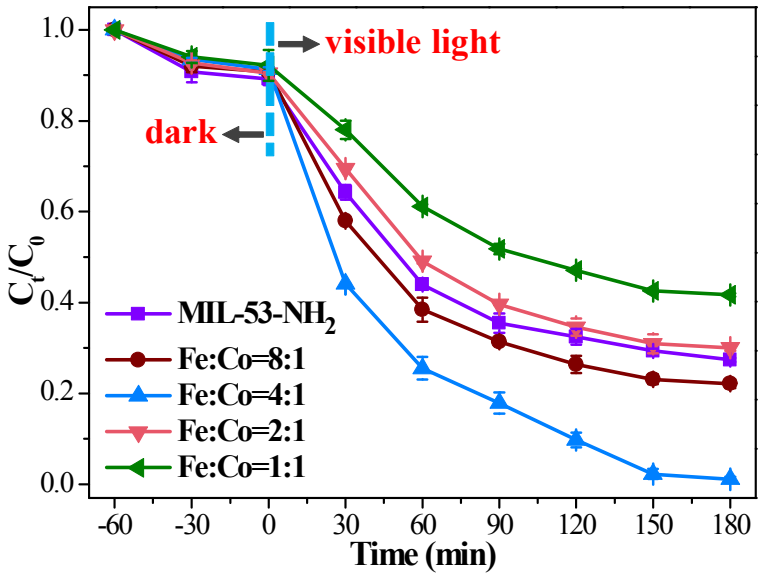

Fig. S4. The photocatalytic degradation of BPA using as-prepared catalysts

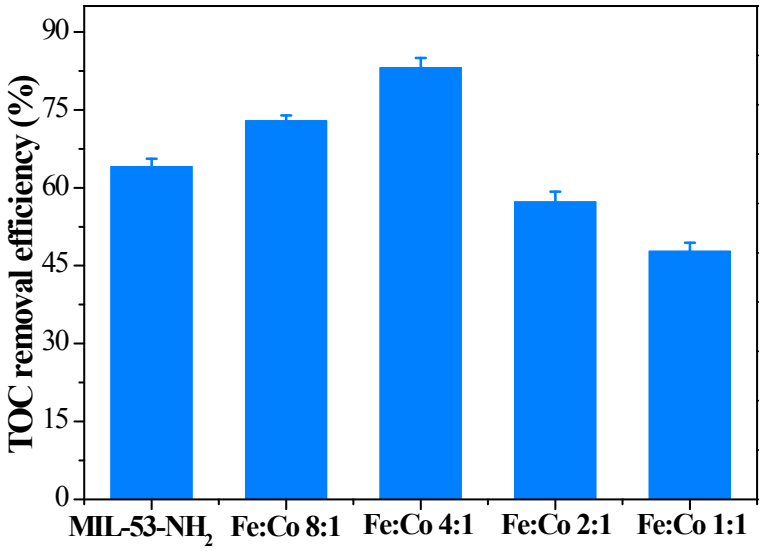

Fig. S5. The TOC removal efficiency by as-prepared catalysts.

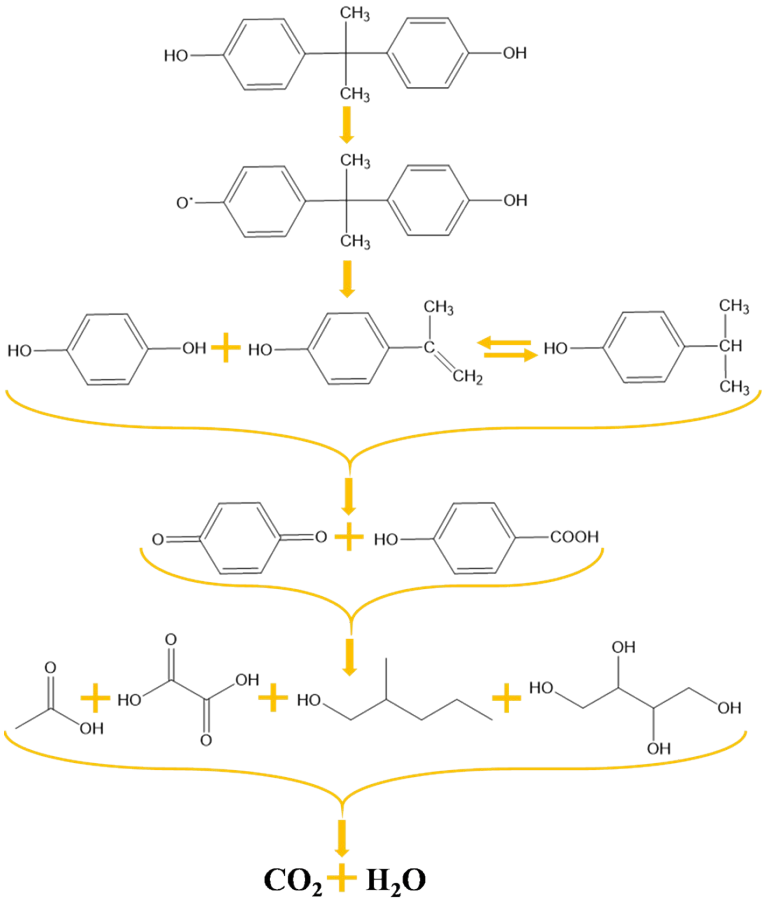

Fig. S6. A possible BPA degradation pathway.

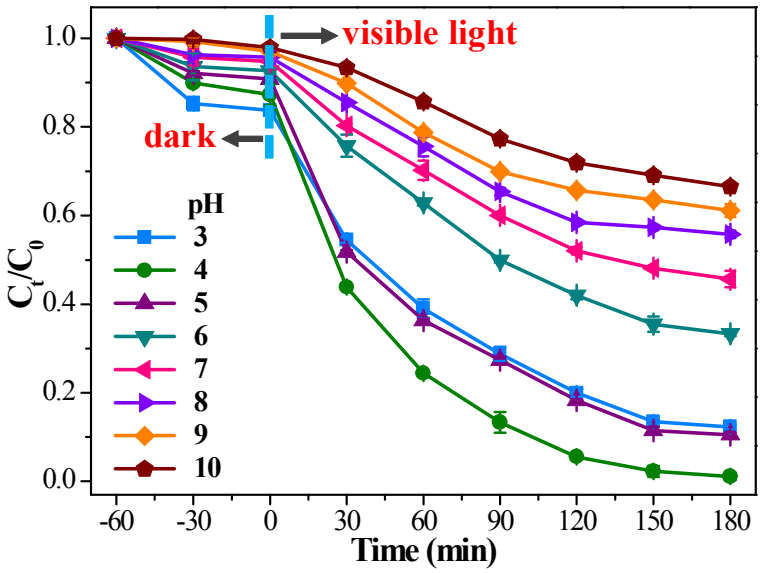

Fig. S7. The effects of pH on BPA degradation over Co-doped MIL-53-NH_2 (Fe:Co 4:1)

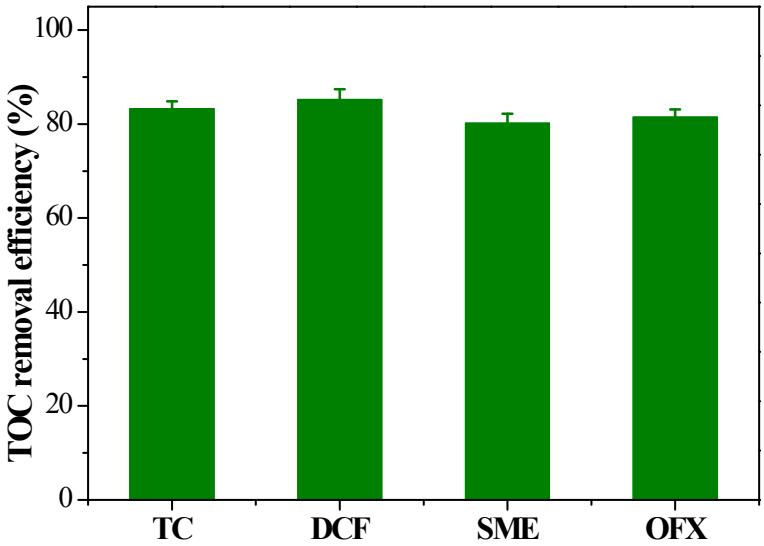

Fig. S8. The TOC removal efficiency for other organic pollutants by Co-doped MIL-53-NH_2.

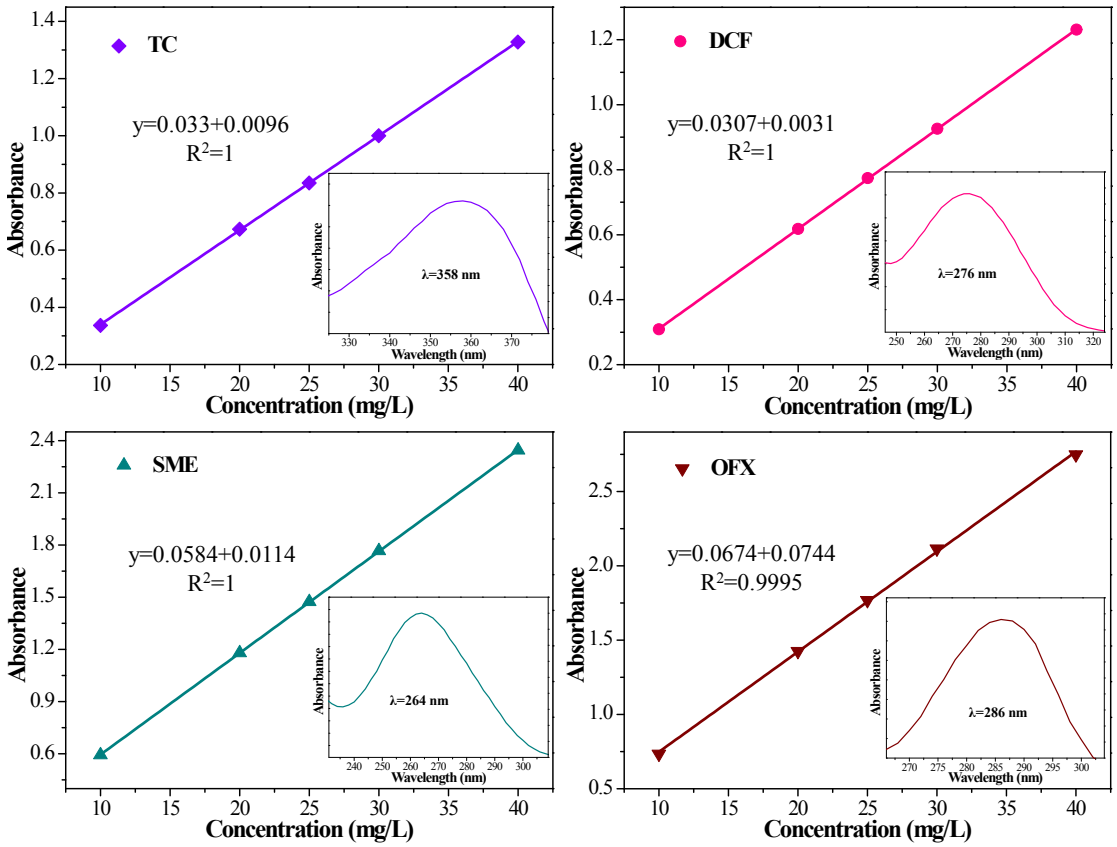

Fig. S9. The standard curves of target objects (Insert: the spectrum scan).