

Supporting Information

The conversion rate of benzyl alcohol and the selectivity of benzaldehyde were calculated with the following equations:

$$\text{Conversion \%} = [(C_0 - C_a)/C_0] \times 100\% \quad (\text{S1})$$

$$\text{Selectivity \%} = [C_b/(C_0 - C_a)] \times 100\% \quad (\text{S2})$$

C_0 : initial concentration of benzyl alcohol; C_a and C_b : Concentration of benzyl alcohol and benzaldehyde after photocatalytic reaction

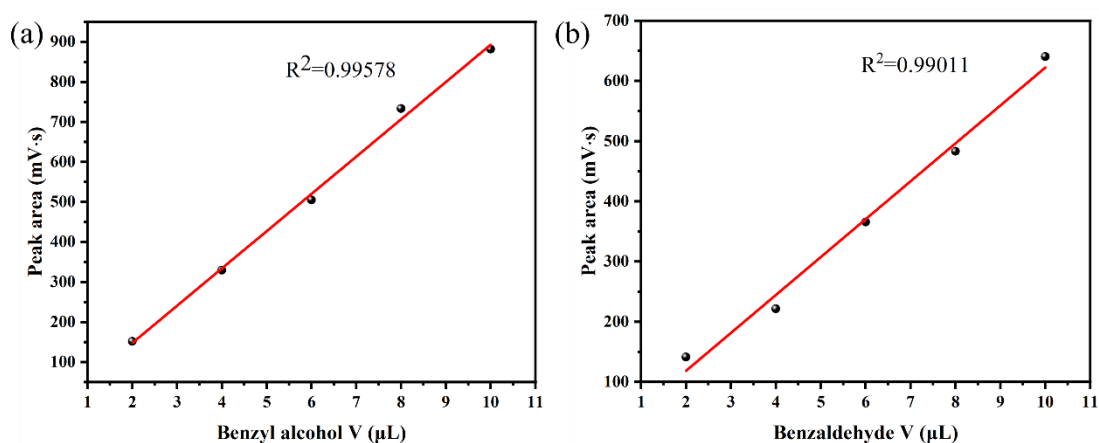


Figure S1. Standard curves for (a) benzyl alcohol and (b) benzaldehyde .

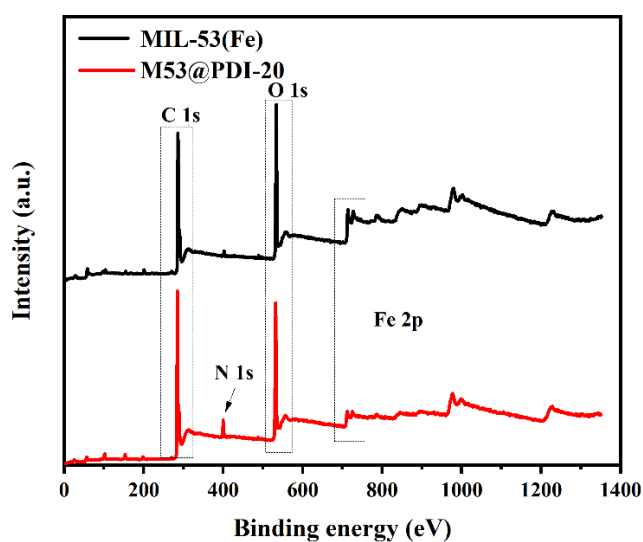


Figure S2. Full spectra of MIL-53(Fe) and M53@PDI-20 samples.

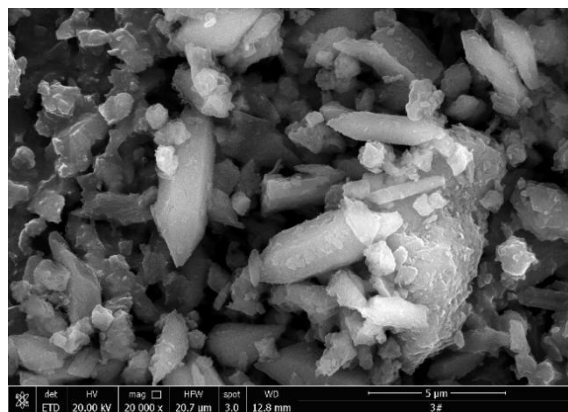


Figure S3. SEM image of M53@PDI-20.

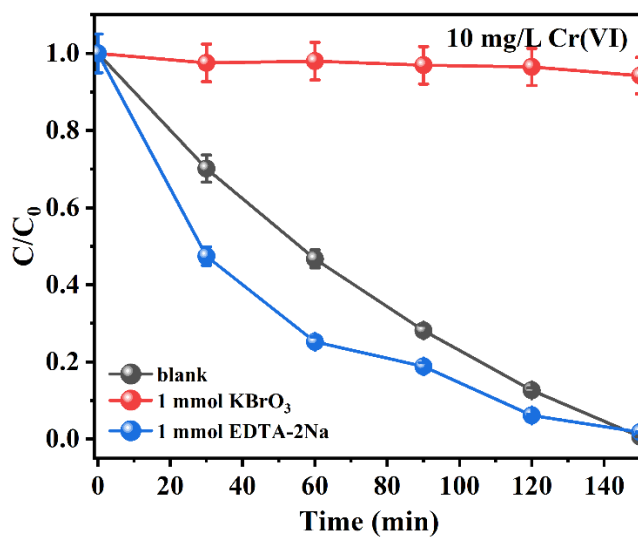


Figure S4. Active species capture experiments for the reduction of 10 mg/L Cr (VI) on M53@PDI-20.

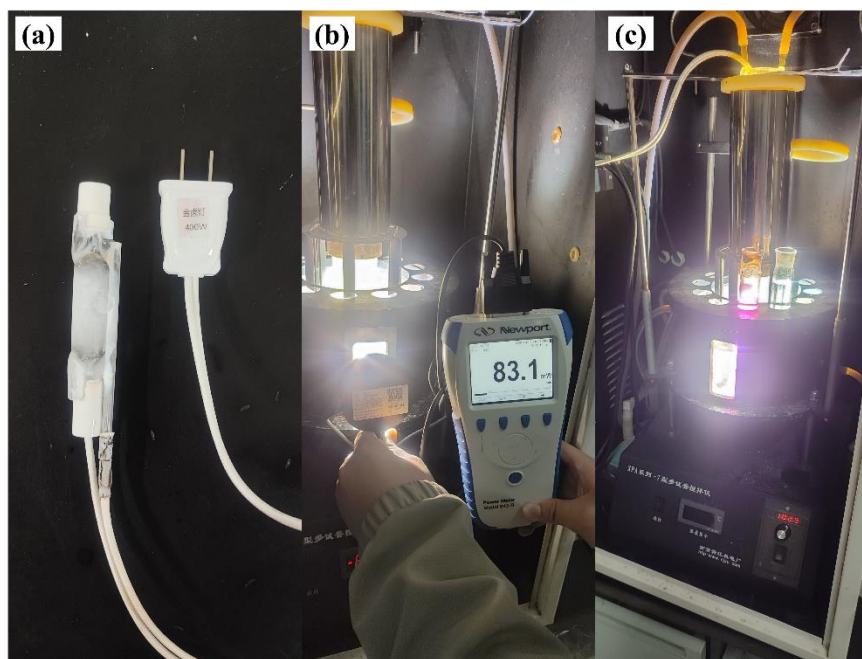


Figure S5. (a) Metal Halide Lamp (400 W), (b) The measured optical power of metal halide lamp (400 W) and (c) Photocatalytic reaction device.

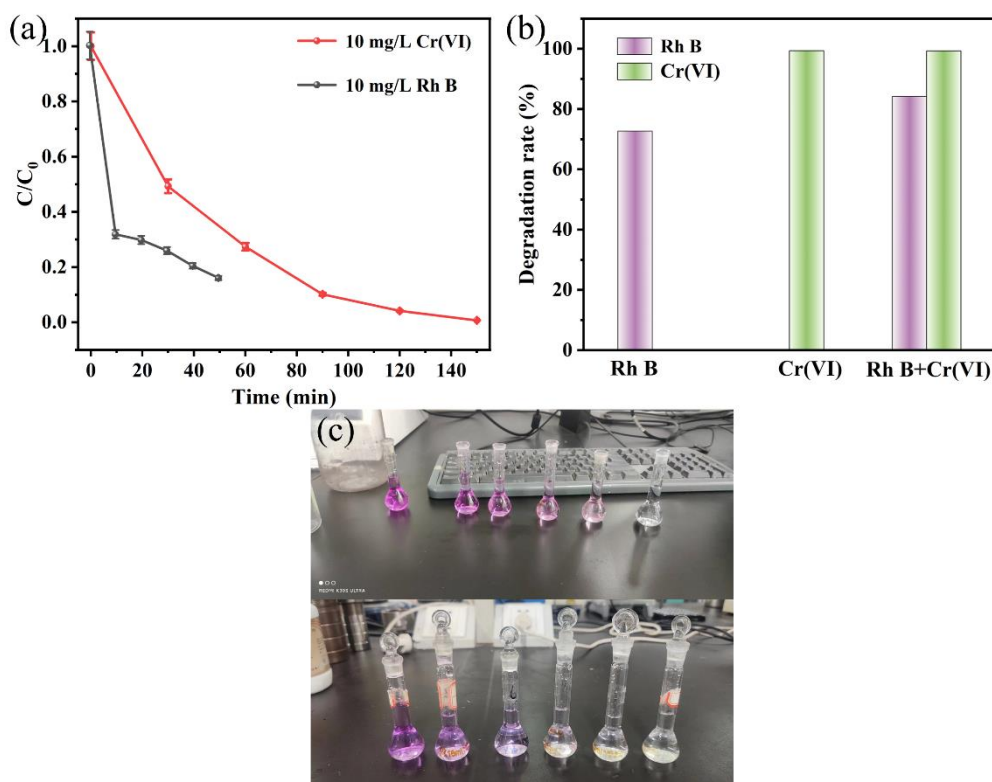


Figure S6. (a) Synergistic degradation diagram of M53@PDI-20 samples, (b) Degradation rates of single and mixed degradates and (c) Colour development reactions of singly and synergistically degraded Cr (VI).

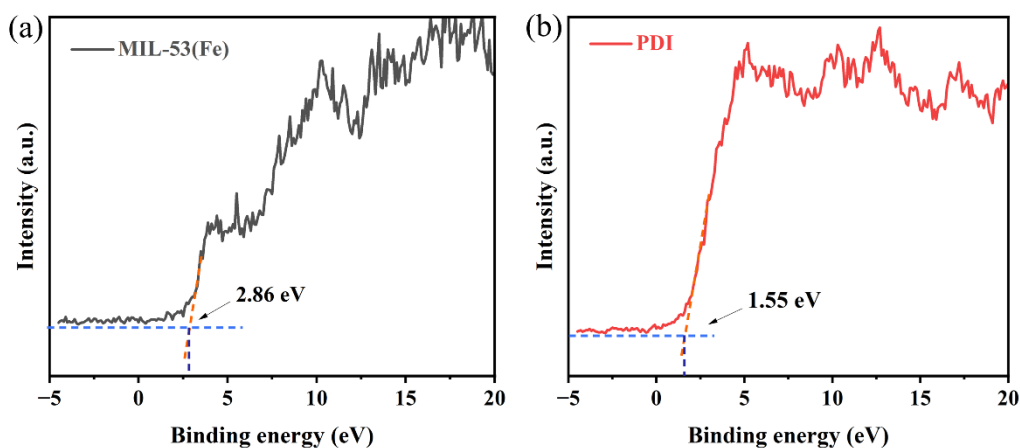


Figure S7. VB-XPS spectra of (a) MIL-53(Fe) and (b) PDI.

Table S1. Band energy levels of MIL-53(Fe) and PDI.

Samples	E_g (eV)	E_{CB} (vs NHE, eV, pH=7)	E_{VB} (vs NHE, eV, pH=7)
PDI	1.70	-0.39	1.31
MIL-53(Fe)	2.72	-0.1	2.62