

Efficient degradation of organic pollutants without any external assistance in wide pH range using carbon vacancy-modified Fe–N–C catalyst

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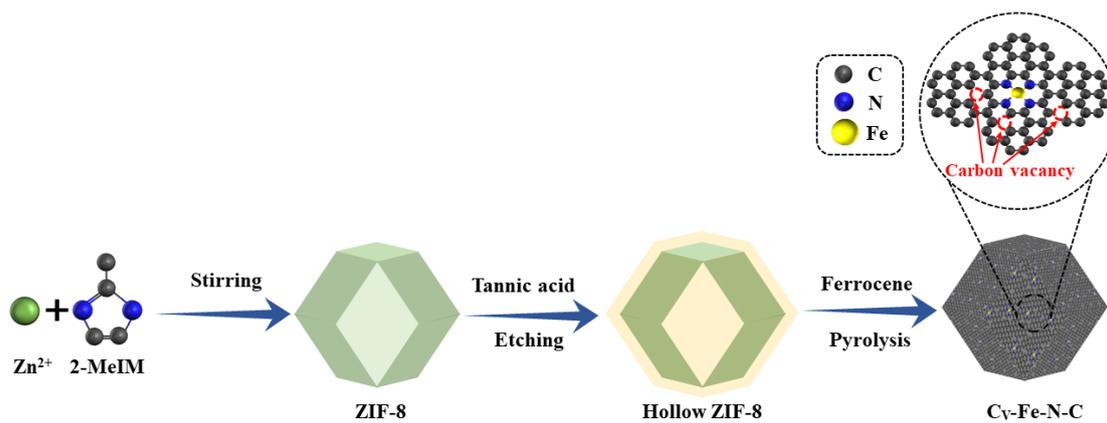


Figure S1. Schematic illustration of the synthesis process of Cv-Fe-N-C SACs.

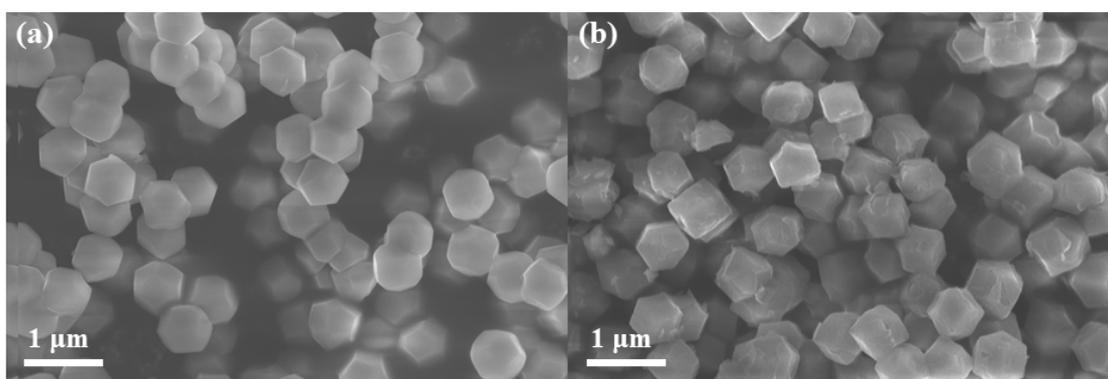


Figure S2. SEM images of ZIF-8 (a) and hollow ZIF-8 (b).

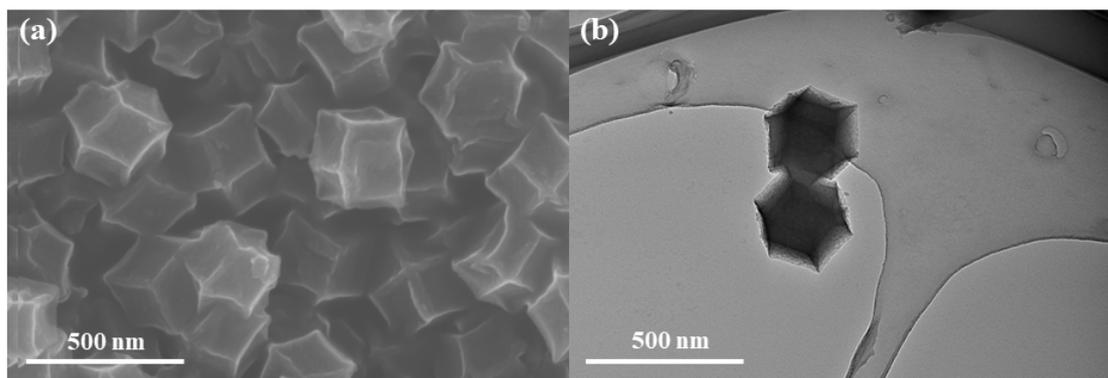


Figure S3. (a) SEM images of Fe-N-C and (b) TEM images of Fe-N-C.

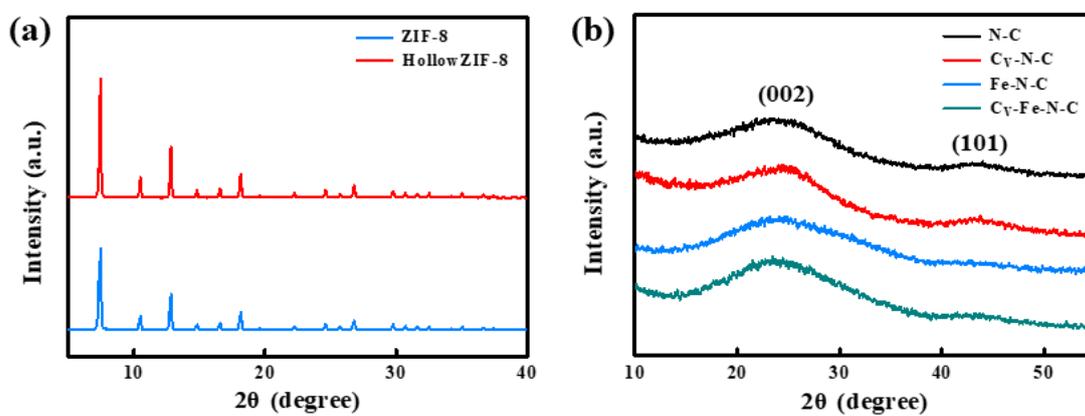


Figure S4. (a) XRD patterns of ZIF-8 and hollow ZIF-8, and (b) XRD patterns of N-C, C_V-N-C, Fe-N-C and C_V-Fe-N-C.

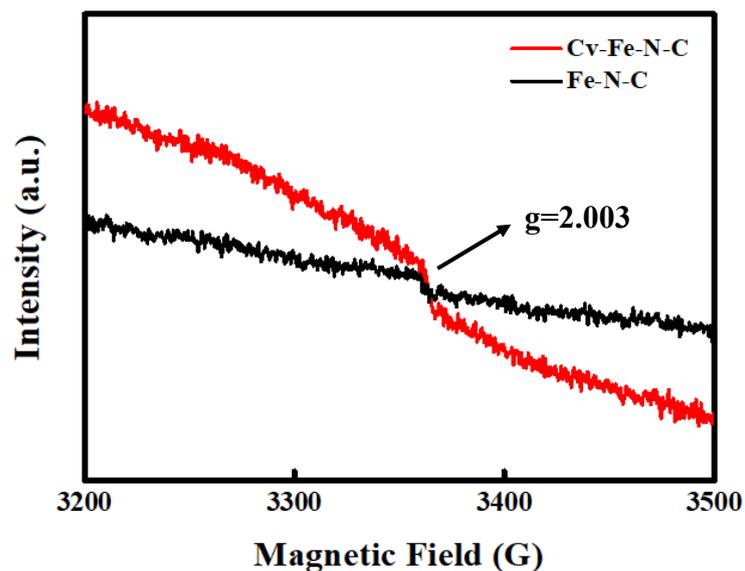


Figure S5. The EPR spectra of Cv-Fe-N-C and Fe-N-C

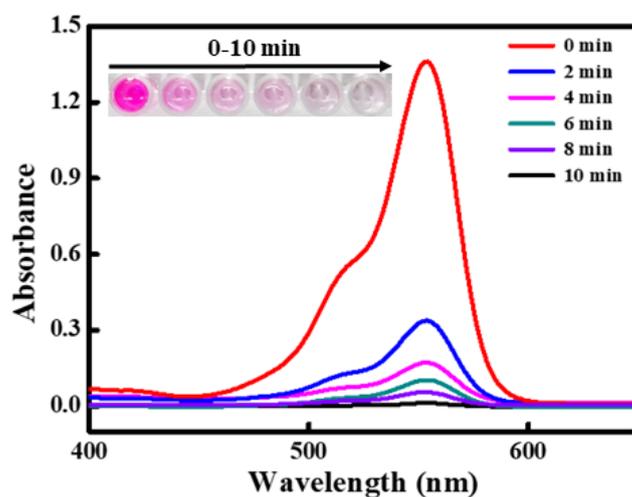


Figure S6. The UV-vis absorbance spectra of RhB solution in the presence of Cv-Fe-N-C at different reaction time. Experimental conditions: $[Cv-Fe-N-C] = 0.2 \text{ g/L}$, $[RhB]_0 = 10 \text{ mg/L}$, and $T = 298 \text{ K}$.

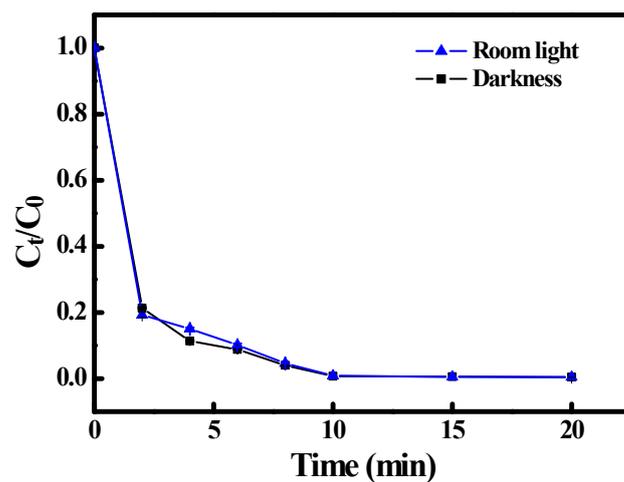


Figure S7. Degradation effects of RhB under room light or darkness. Experimental conditions: $[C_V\text{-Fe-N-C}] = 0.2 \text{ g/L}$, $[\text{RhB}]_0 = 10 \text{ mg/L}$, and $T = 298 \text{ K}$.

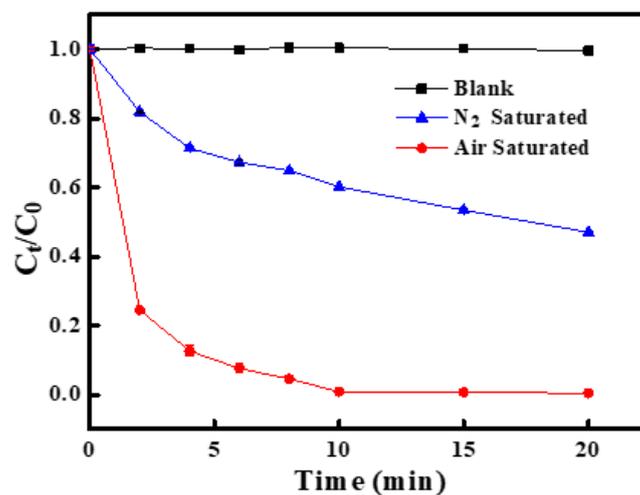


Figure S8. Degradation of RhB with $C_V\text{-Fe-N-C}$ under N_2 or air saturated solution. Experimental conditions: $[C_V\text{-Fe-N-C}] = 0.2 \text{ g/L}$, $[\text{RhB}]_0 = 10 \text{ mg/L}$, and $T = 298 \text{ K}$.

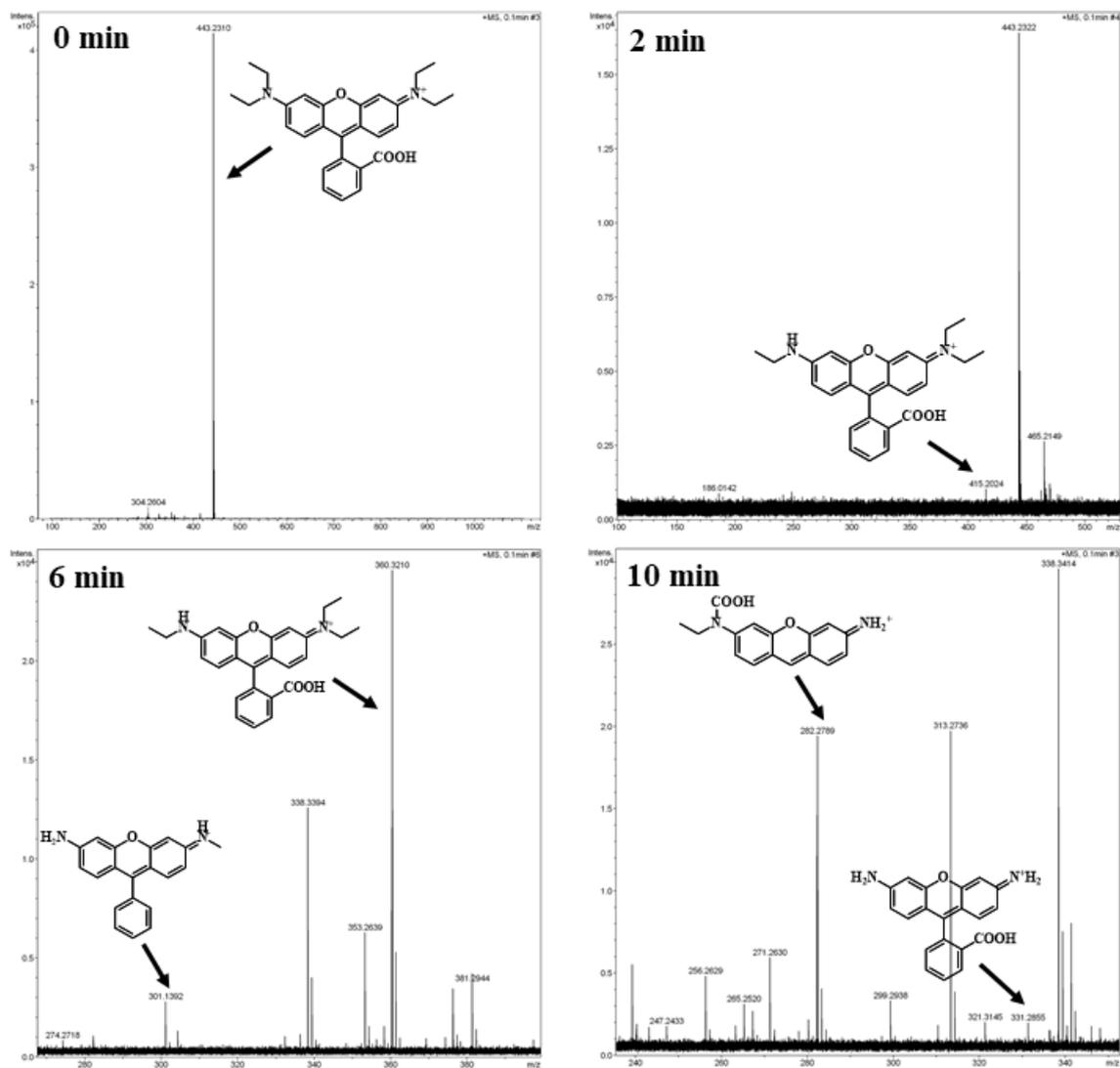


Figure S9. Mass spectra of the main degradation products of RhB with C_V-Fe-N-C at the degradation time of 0, 2, 6, and 10 min.

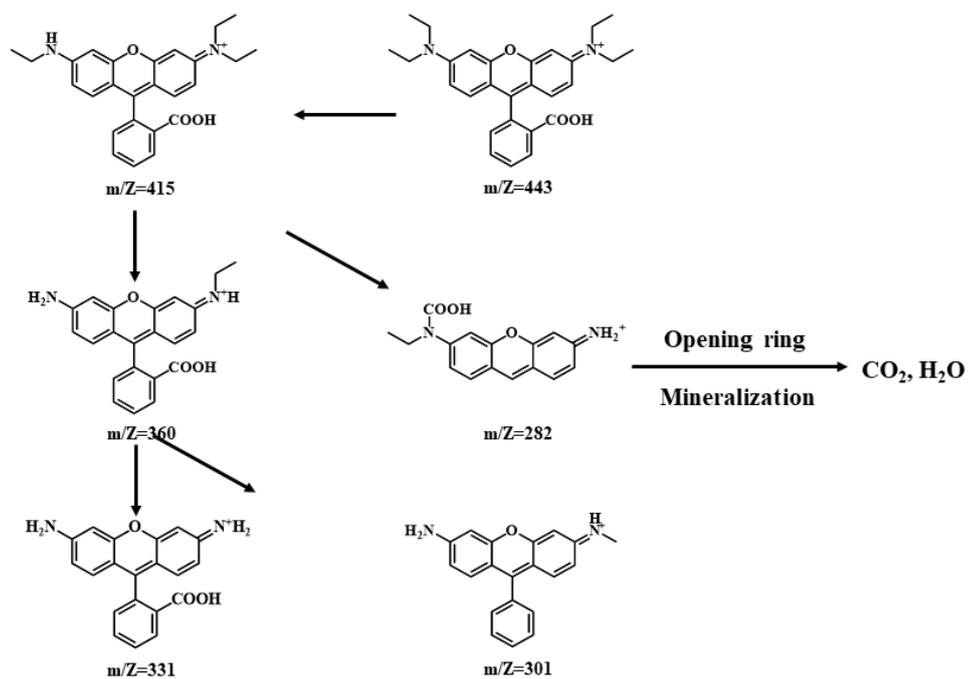


Figure S10. The possible degradation pathway of RhB with C_V-Fe-N-C.

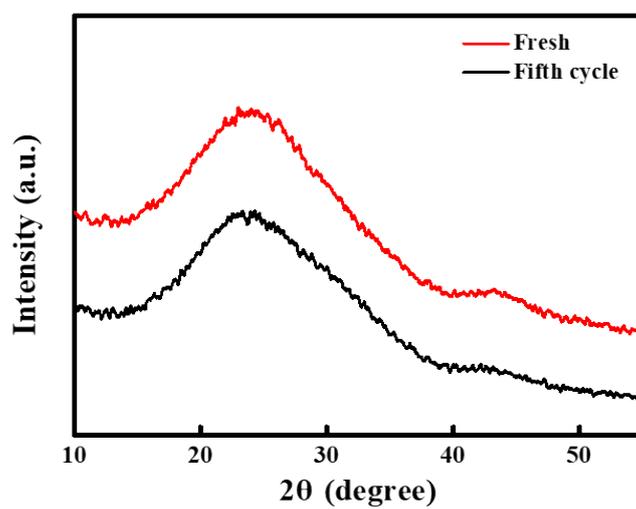


Figure S11. XRD pattern of C_V-Fe-N-C SACs before and after fifth cycle use.

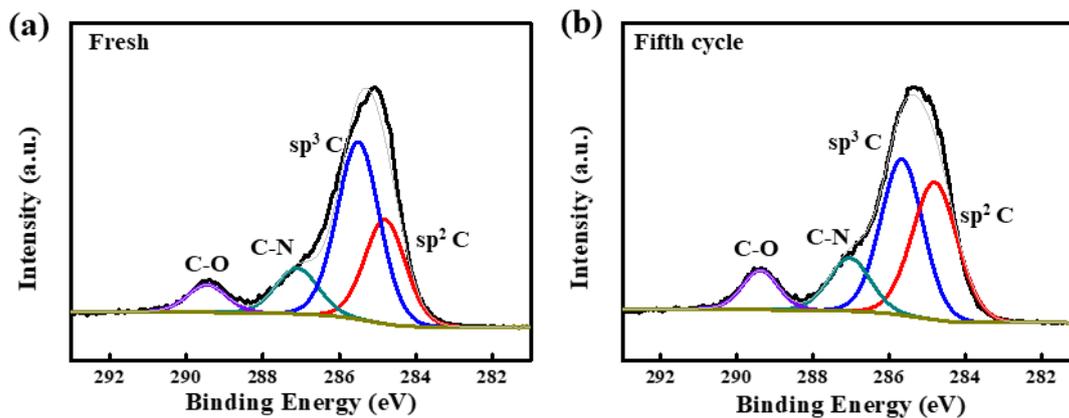


Figure S12. XPS C 1s spectra of C_V-Fe-N-C SACs before and after fifth cycle use.