Supporting Information for

Phosphorus-doped carbon nitride with grafted sulfonic acid groups for efficient photocatalytic synthesis of xylonic acid

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Experimental Section

Materials: Melamine, phosphoric acid (PA), potassium hydroxide (KOH), xylose, trifluoromethanesulfonic acid and dichloromethane of reagent grade were purchased from Macklin Industrial Corporation (Shanghai, China). Potassium iodide (KI), isopropanol (IPA), benzoquinone (BQ), tryptophan (Trp) and other reagents were provided by Aladdin Industrial Corporation. Except for the standard samples, the other chemicals were analytically pure and used directly without further purification.

Results and Discussion

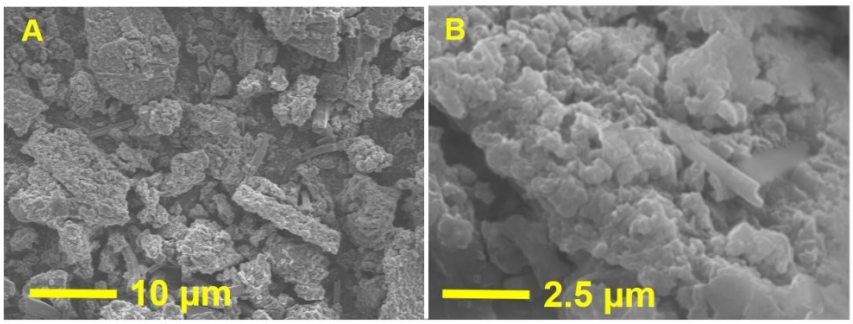

Fig. S1. SEM images of P@CN-SO_3H.

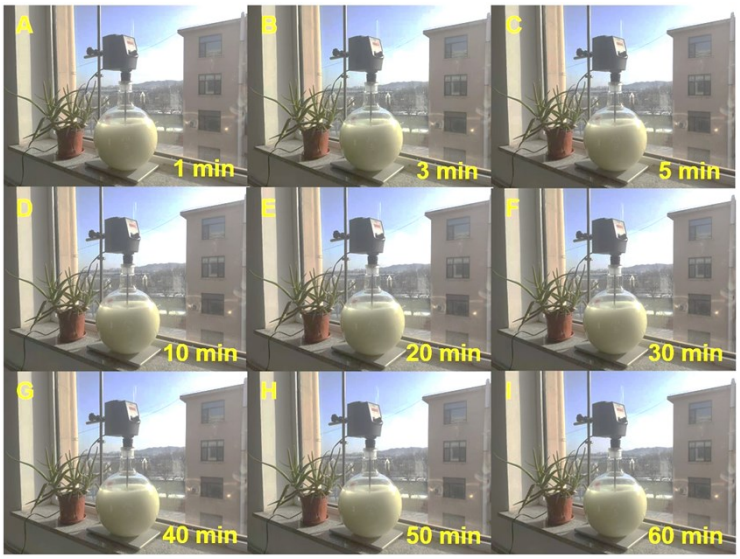

Fig. S2. One-thousand-fold scale-up experiment for the synthesis of xylonic acid photocatalyzed by P@CN-SO_3H in the irradiation of sunlight at room temperature (~20 ^oC).

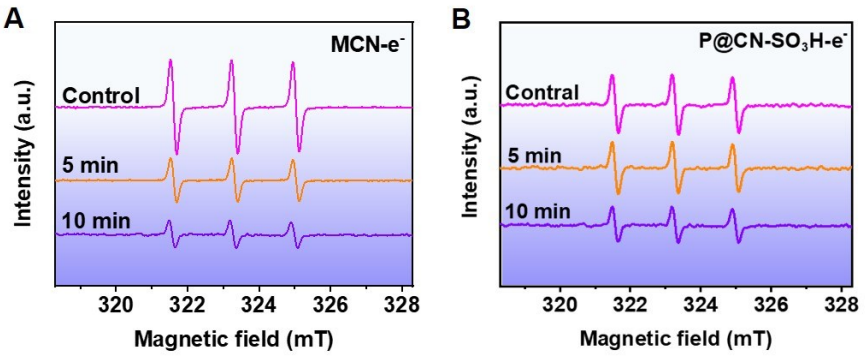

Fig. S3. TEMPO ESR spin-labeling for e^- of MCN (A) and P@CN-SO_3H (B).

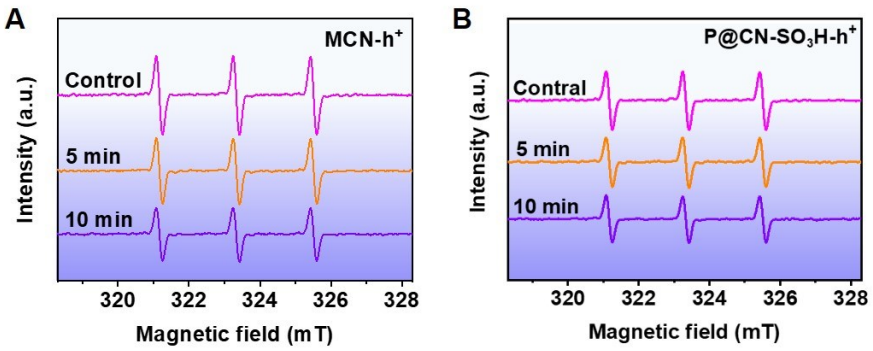

Fig. S4. TEMPO ESR spin-labeling for h^+ of MCN (A) and P@CN-SO_3H (B).

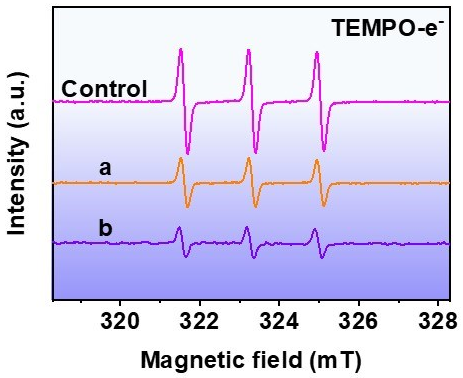

Fig. S5. TEMPO ESR spin-labeling for e^- of MCN (a) and P@CN-SO_3H (b) under the same conditions.

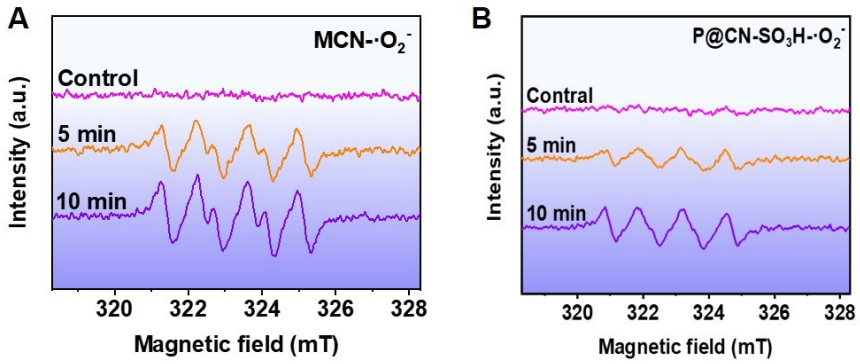

Fig. S6. DMPO ESR spin-trapping for $\cdot O_2^-$ of MCN (A) and P@CN-SO_3H (B).

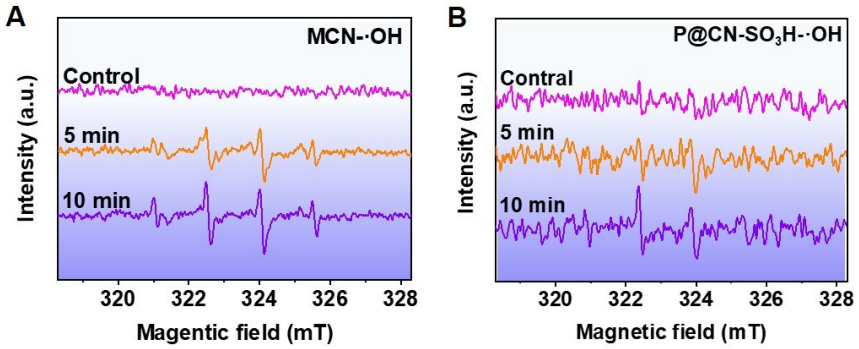

Fig. S7. DMPO ESR spin-trapping for ·OH of MCN (A) and P@CN-SO_3H (B).

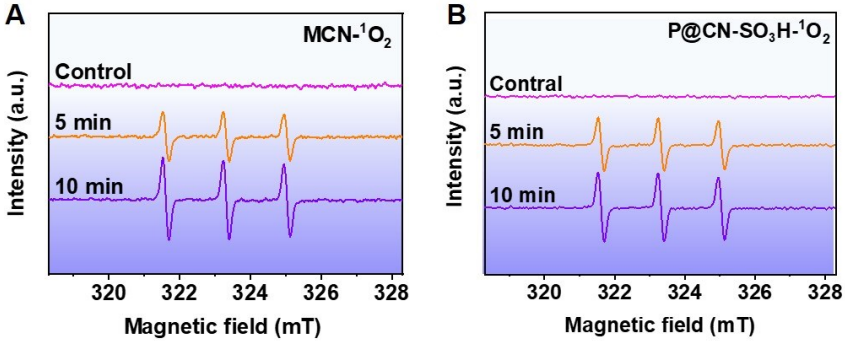

Fig. S8. TEMPONE ESR spin-trapping for $^1O_2$ of MCN (A) and P@CN-SO_3H (B).