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Supporting information

Novel photoactivation and solar-light-driven thermocatalysis on ε-MnO_2 nanosheets lead to highly efficient catalytic abatement of ethyl acetate without acetaldehyde as unfavorable by-product

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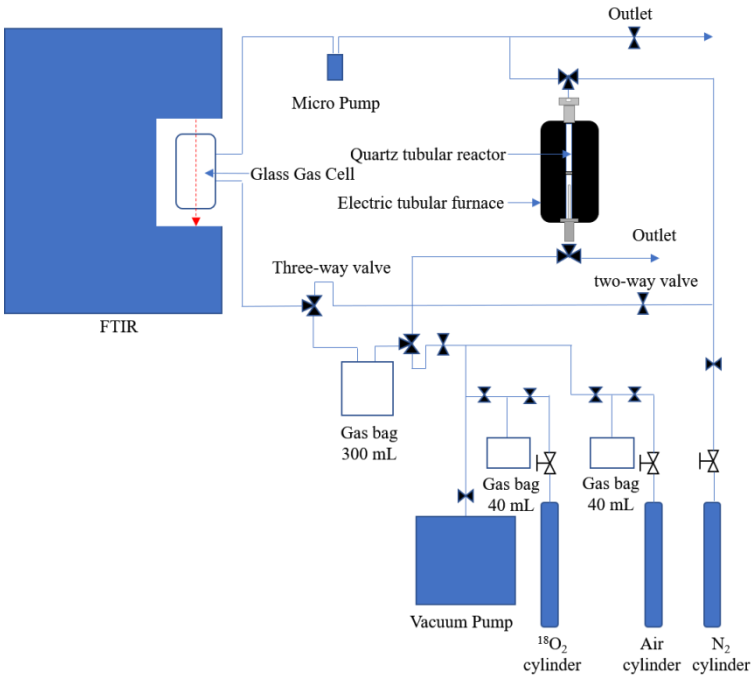

Scheme S1. The Set-up for the isotope labelling experiment by monitored the $^{18}O_2$ or $^{16}O_2$ reacted with ethyl acetate ($^{12}C_4{}^{1}H_8{}^{16}O_2$) on the ε-$MnO_2$ by FTIR.

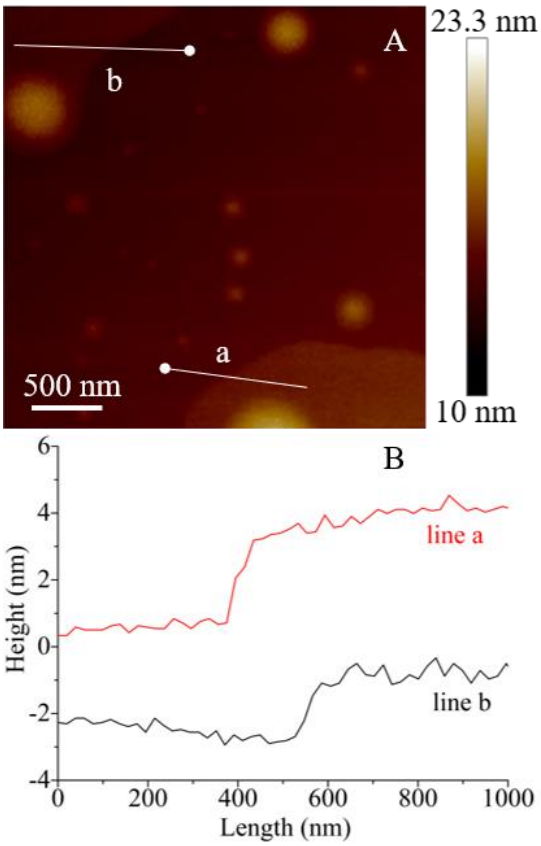

Figure S1. AFM image (A) and height-length contour (B) across the white lines of the ε-MnO_2 sample.

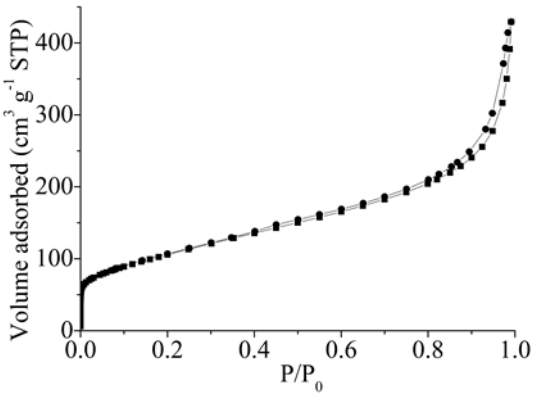

Figure S2. N_2 adsorption-desorption of the ε-MnO_2 sample.

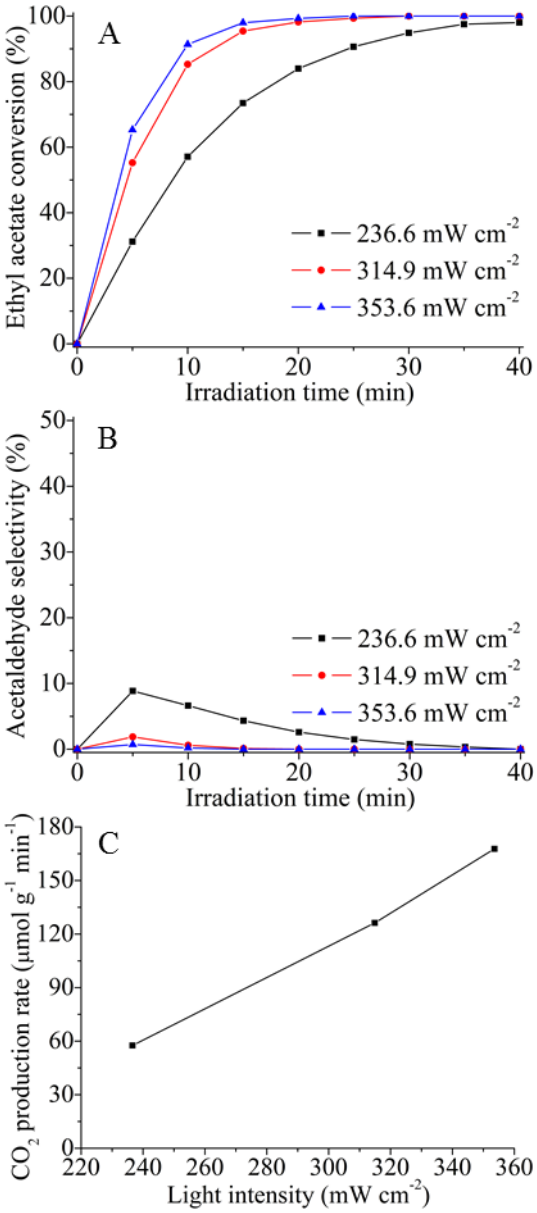

Figure S3. The time course of ethyl acetate conversion (A) and acetaldehyde selectivity (B), and the r_{CO2} value (C) of the ε-MnO_2 sample under the UV-Vis-IR irradiation with different light intensities.

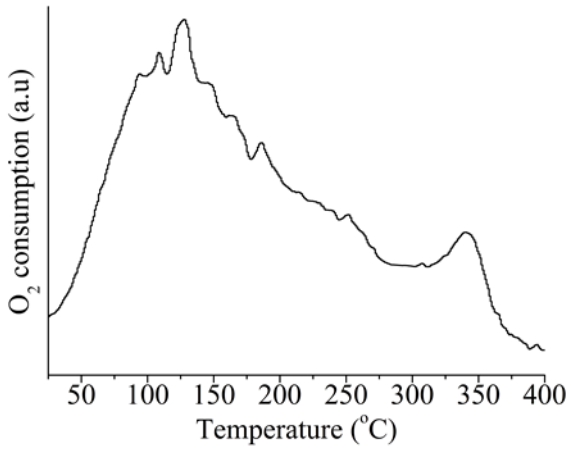

Figure S4. The O_2-TPO profile of the ε-MnO_2 sample pre-reduced by CO at 170 ºC.

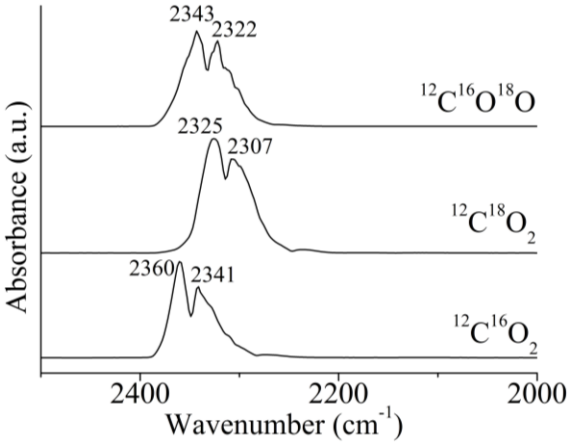

Figure S5. FTIR spectra of pure gases of $^{12}C^{16}O_2$, $^{12}C^{18}O_2$, and $^{12}C^{16}O^{18}O$ prepared by the oxidation of $^{12}C^{16}O$ by $^{18}O_2$ on 1.0 wt% Pt/Al_2O_3.

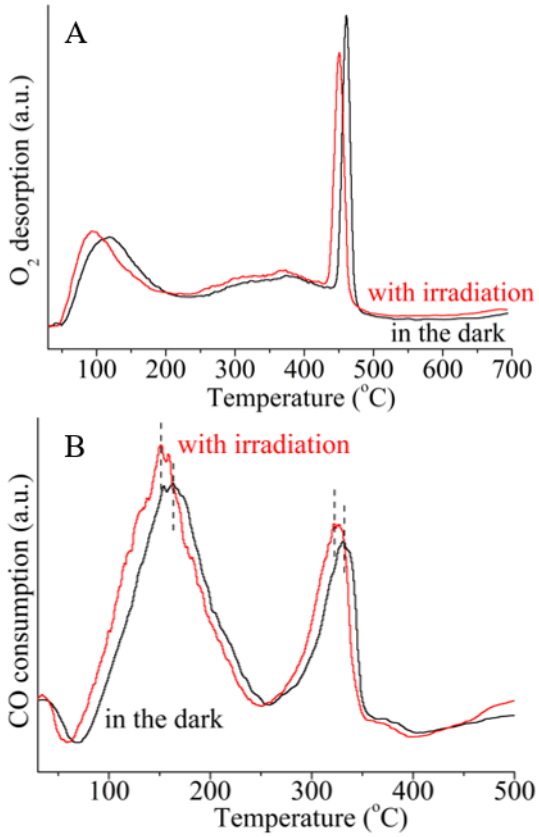

Figure S6. The O_2-TPD profiles of the ε-MnO_2 sample in the dark or with the UV-vis-IR irradiation (A). The CO-TPR profile of the ε-MnO_2 sample without adsorbed oxygen species in the dark or with the UV-vis-IR irradiation (B).