Insights into the solar light driven thermocatalytic oxidation of VOCs over tunnel structured manganese oxides

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Fig. S1 (A) N$_2$ adsorption–desorption isotherms and (B) BJH desorption pore size distribution plots of the manganese oxides.
Fig. S2 Blank experiments for $C_3H_8$ and $C_3H_6$ oxidation.
Fig. S3 C₃H₆ oxidation over 1*1, 2*2, and 3*3 under the infrared irradiation of the Xe lamp (cutoff filter, > 690 nm).
Fig. S4 (A)(B) \( \text{C}_3\text{H}_8 \) and \( \text{C}_3\text{H}_6 \) oxidation over 2*2 under Xe lamp and IR lamp irradiation. (C)(D) \( \text{C}_3\text{H}_6 \) oxidation over 1*1, and 3*3 under Xe lamp and IR lamp irradiation.
Fig. S5 UV-Vis-IR spectra of the manganese oxides.
The catalytic oxidation of HCHO without light or heat source was selected as probe reaction to explore the low temperature catalytic activity of the three catalysts. The results are presented in Fig. S5. Each sample was measured for three cycles. As can be seen from the diagram, the 2*2 catalyst showed the highest catalytic activity for HCHO oxidation, which can eliminate 80% HCHO in 60 min, and the eliminate efficiency remained the same for the three cycles. 1*1 showed no catalytic or absorption ability towards HCHO, while the degradation rate of 3*3 for the HCHO oxidation was 67%, 38.4%, and 41.7%, respectively.