Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Nanoflower-like Weak Crystallization Manganese Oxide for Efficient Removal of Low-concentration NO at Room Temperature

Figure S1. Typical SEM images of WMO (a) and α-MnO_2 (b) under different reaction temperatures.

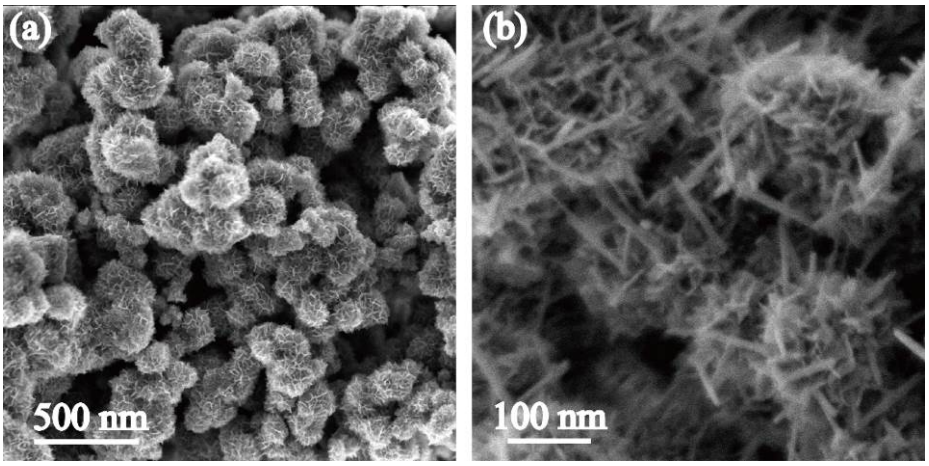


Figure S2. N_2 adsorption–desorption isotherms of WMO.

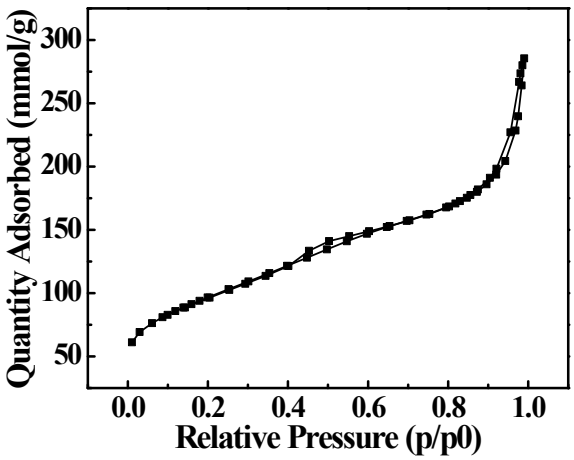
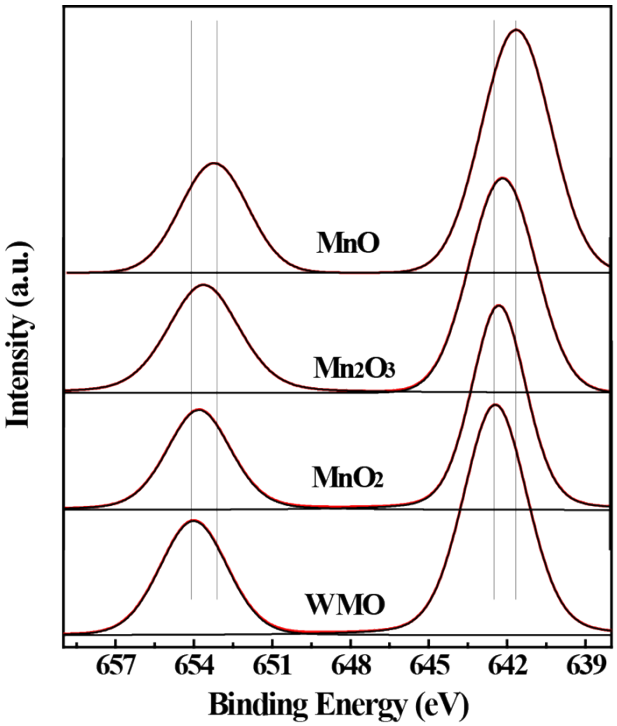


Figure S3. XPS spectrum of the (a) Mn 2p of WMO, MnO_2, Mn_2O_3 and MnO, (b) O 1s of WMO before and after NO removal test. MnO_2 was purchased from Adamas Reagent, Ltd. Mn_2O_3 was obtained by calcined WMO under 600 °C for 6h. Under H_2 circumstance, through the calcination of $MnCO_3$ under 600 °C for 10 h can get MnO.

(a)



(b)

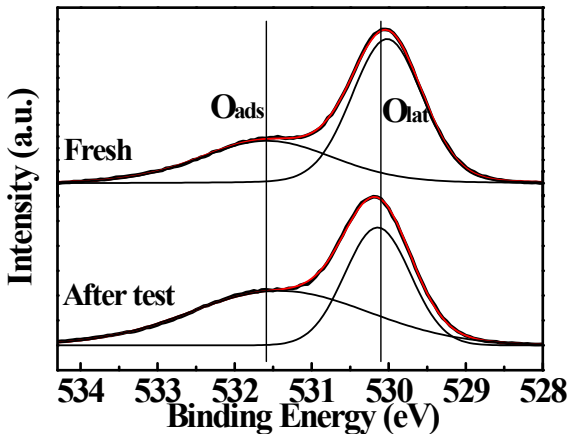


Figure S4. TG-DTA-MS (H_2O, 18) curves of WMO.

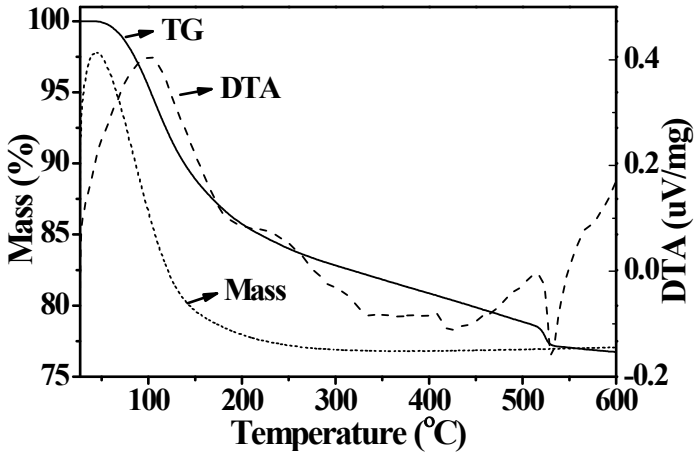


Figure S5. FT-IR spectra of (a) fresh, (b) after dry inlet test, and (c) after moisture inlet test WMO.

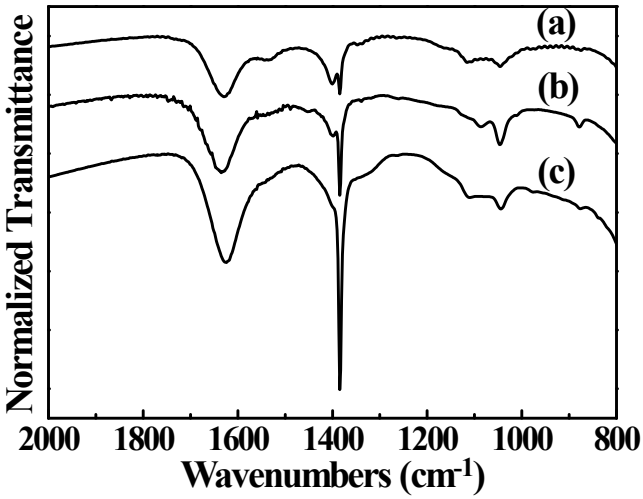


Figure S6. NO removal test for α-MnO_2. Reaction conditions: [NO] = 10 ppm, [O_2] = 21%, balance = N_2, temperature = 25 °C, and GHSV = 40,000 h^{-1}.

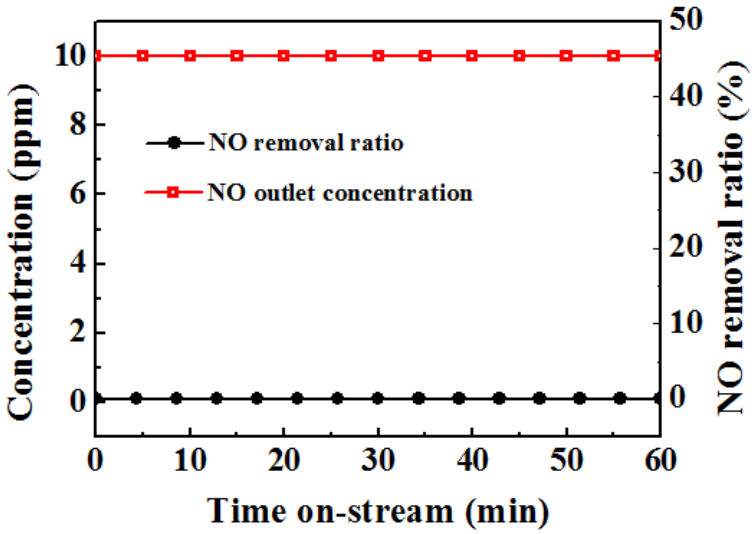


Figure S7. Structural evolution corresponding to these reaction paths on clean (A), Mn-vacancy (B), hydrated surfaces (C). In these Figures, v-, w-, ads- and des- represent Mn-vacancy surface, hydrated surface, adsorbed intermediate, and desorbed intermediate, respectively. Different kinds of elements are represented by different colors in that: Manganese (purple), Oxygen (red), Nitrogen (blue), Hydrogen (white).

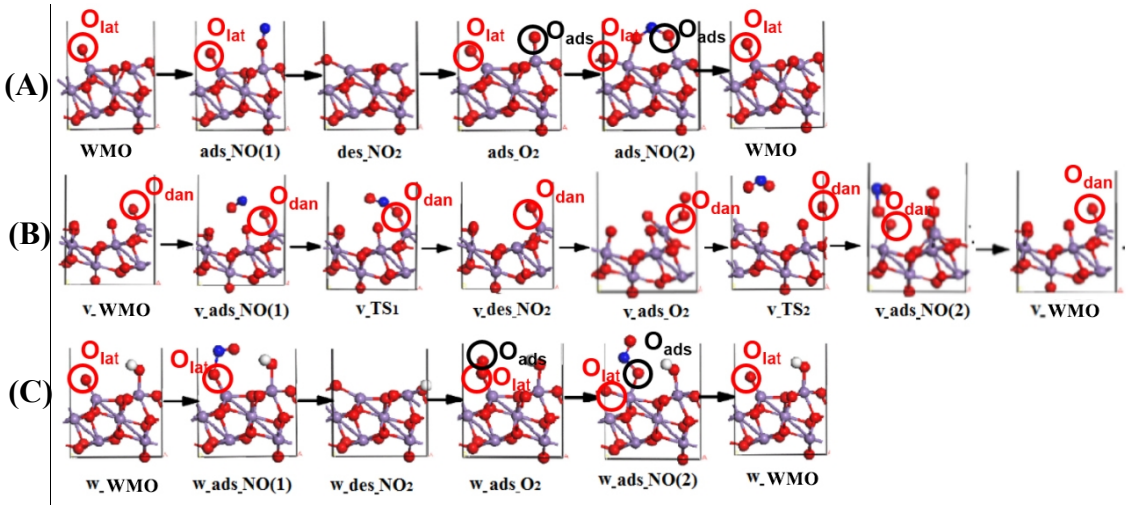


Figure S8. NO removal test for WMO. Reaction conditions: [NO] = 10 ppm, [O_2] = 0, balance = N_2, temperature = 25 °C, and GHSV = 40,000 h^{-1}.

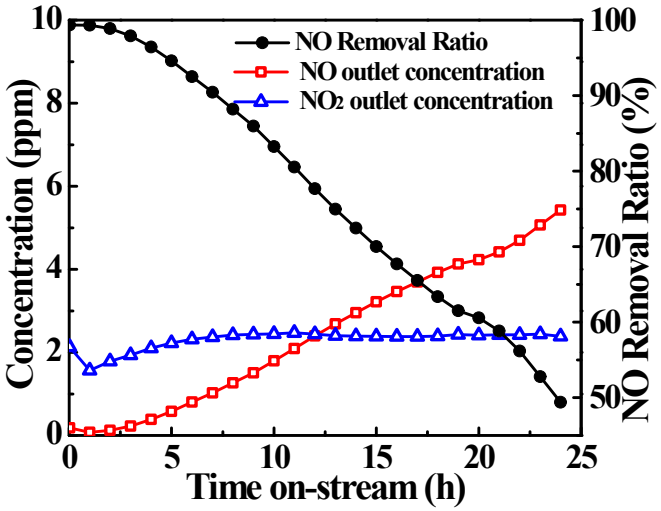


Figure S9. Digital photos of a honeycomb ceramic before (a) and after (b) coated with WMO.

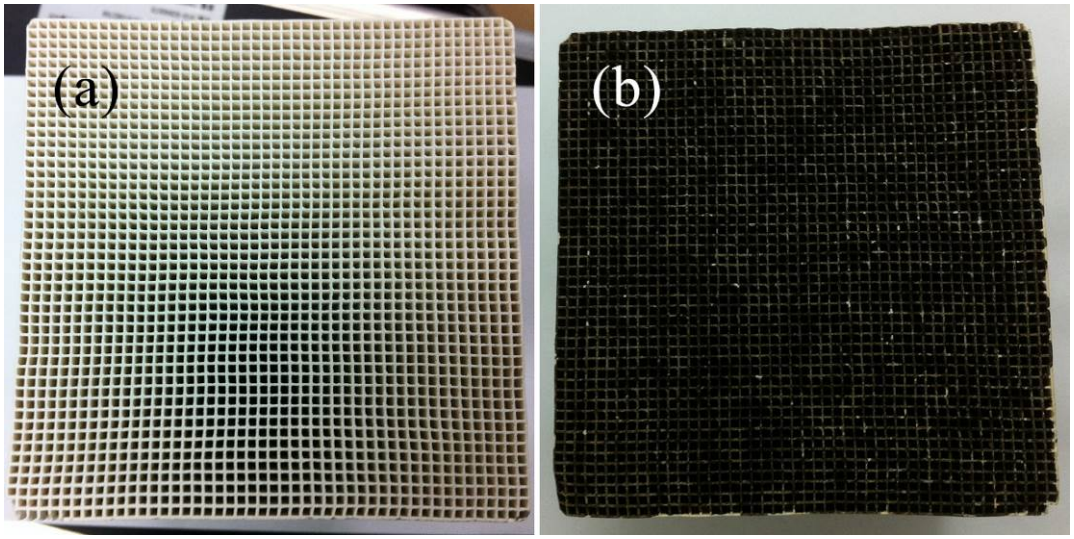


Table S1. XPS results of the Mn 2p of different Mn oxides.

Mn oxides	WMO	MnO_2	Mn_2O_3	MnO
Mn $2p_{1/2}$	654.0	653.8	653.6	653.2
Mn $2p_{3/2}$	642.4	642.2	642.1	641.6