

Low-temperature NH_3 -SCR on $\text{Ce}_x\text{-Mn-Ti}_y$ catalysts: Improved performance by the mutual effect between Ce and Ti

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Summary of the supporting information: 8 pages and 9 figures

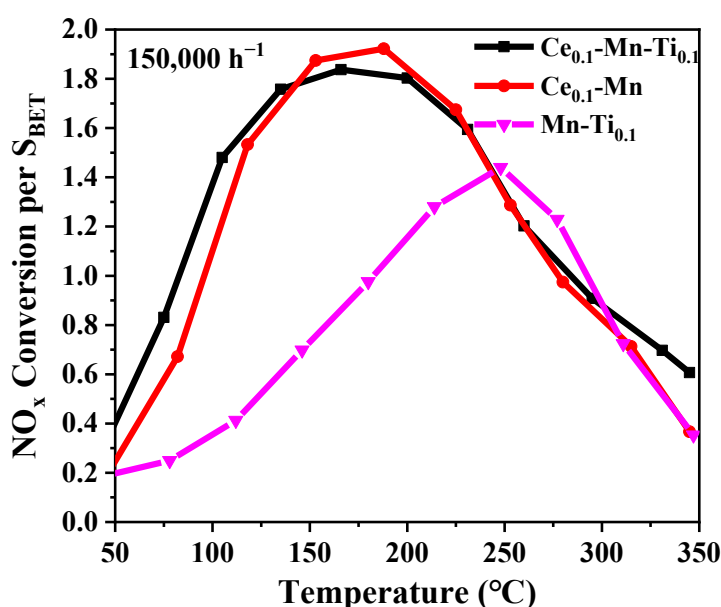


Figure S1. NO_x conversion per unit S_{BET} under $150,000 \text{ h}^{-1}$ over $\text{Ce}_x\text{-Mn-Ti}_y$ catalysts. Reaction conditions: $[\text{NO}] = [\text{NH}_3] = 500 \text{ ppm}$, $[\text{O}_2] = 5 \text{ vol.}\%$, with Ar as the balanced gas.

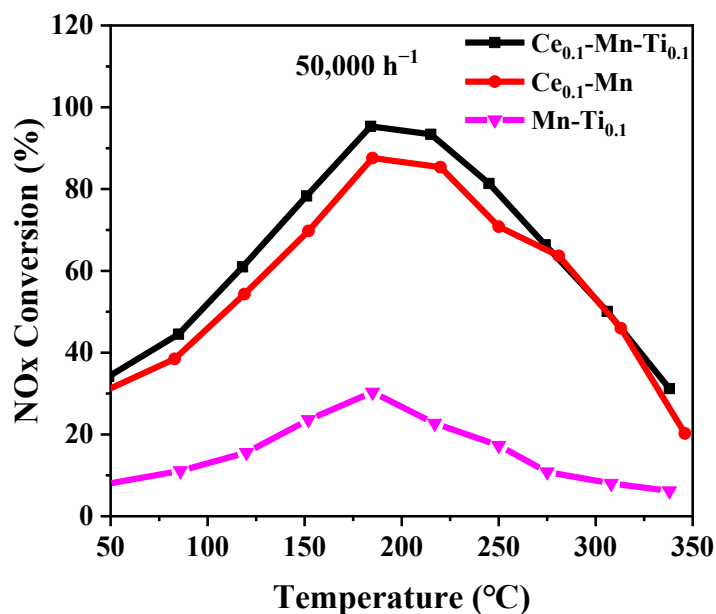


Figure S2. H₂O resistance under 50,000 h⁻¹ over Ce_x-Mn-Ti_y catalysts. Reaction conditions: [NO] = [NH₃] = 500 ppm, [O₂] = 5 vol.%, H₂O = 2 vol.%, with Ar as the balanced gas.

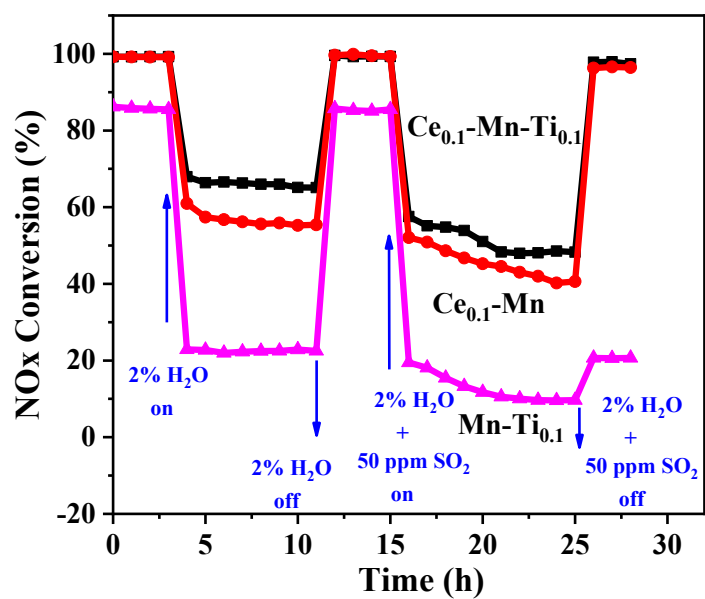


Figure S3. H₂O/SO₂ resistance of Ce_x-Mn-Ti_y catalysts at 100 °C. Reaction conditions: [NO] = [NH₃] = 500 ppm, [O₂] = 5 vol.%, 50 ppm SO₂ (when needed), 2 vol.% H₂O (when needed), with Ar as the balanced gas and a GHSV = 50,000 h⁻¹.

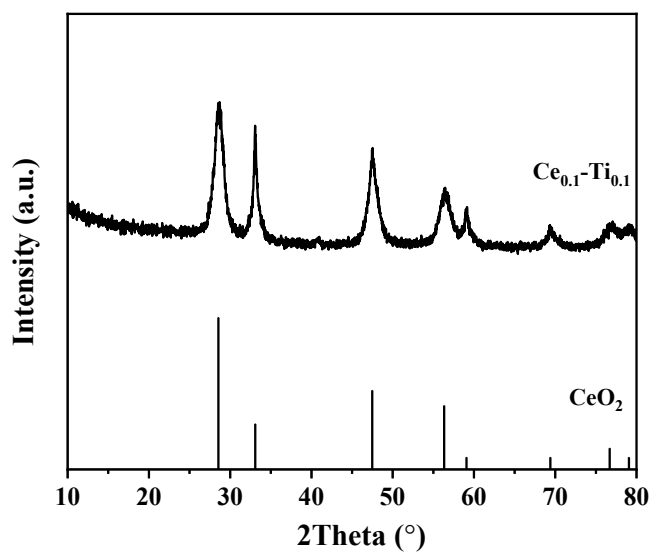


Figure S4. XRD patterns of the $\text{Ce}_{0.1}\text{-Ti}_{0.1}$ catalyst.

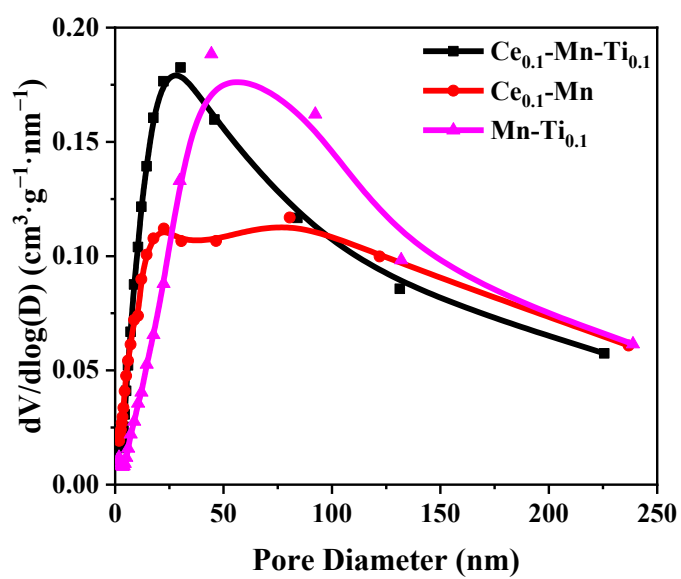


Figure S5. Pore size distribution of the $\text{Ce}_x\text{-Mn-Ti}_y$ catalysts.

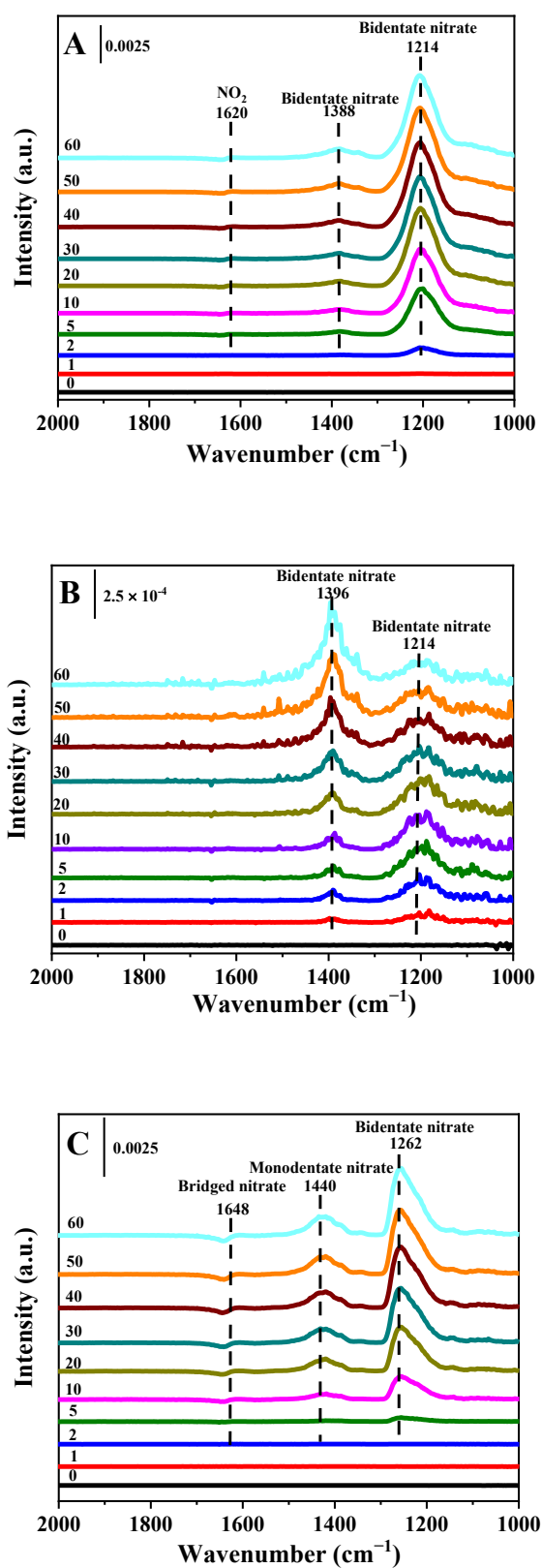


Figure S6. In situ DRIFTS of 500 ppm NO + 5 vol.% O₂/Ar adsorption on Ce_{0.1}-Mn-Ti_{0.1} (A), Ce_{0.1}-Mn (B) and Mn-Ti_{0.1} (C) catalysts at 50 °C.

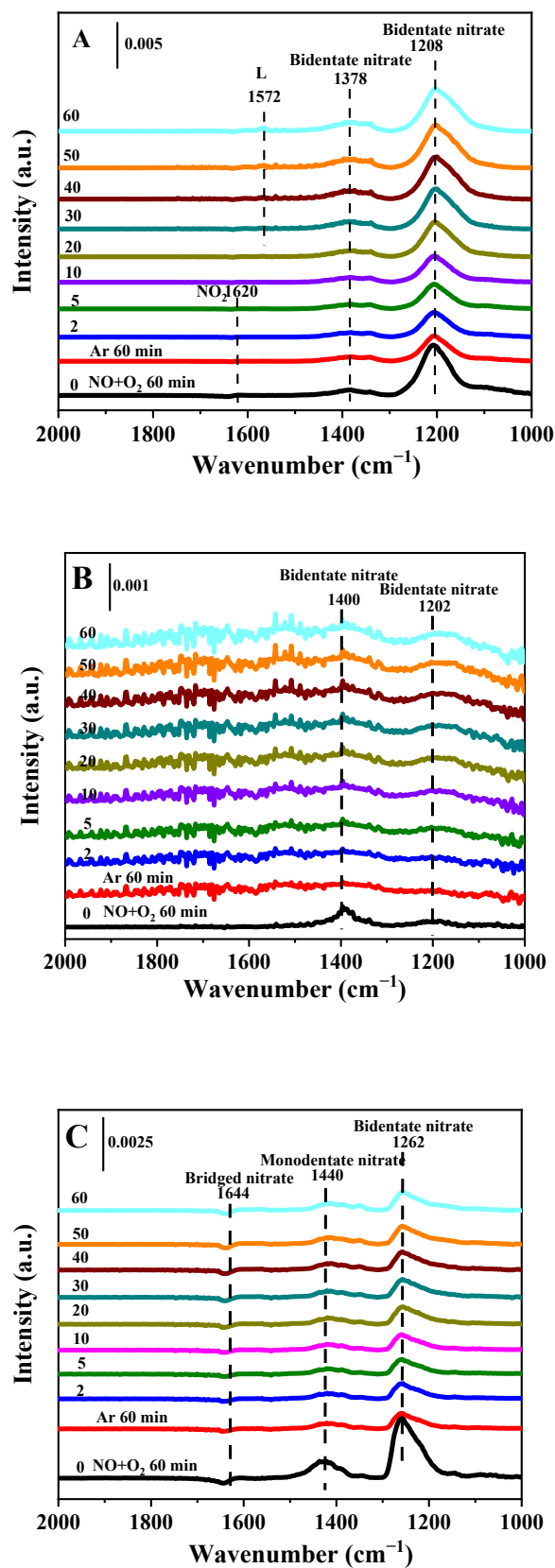


Figure S7. In situ DRIFTS of 500 ppm NH₃ adsorption on Ce_{0.1}-Mn-Ti_{0.1} (A), Ce_{0.1}-Mn (B) and Mn-Ti_{0.1} (C) catalysts after adsorption of 500 ppm NO + 5 vol.% O₂/Ar at 50 °C.

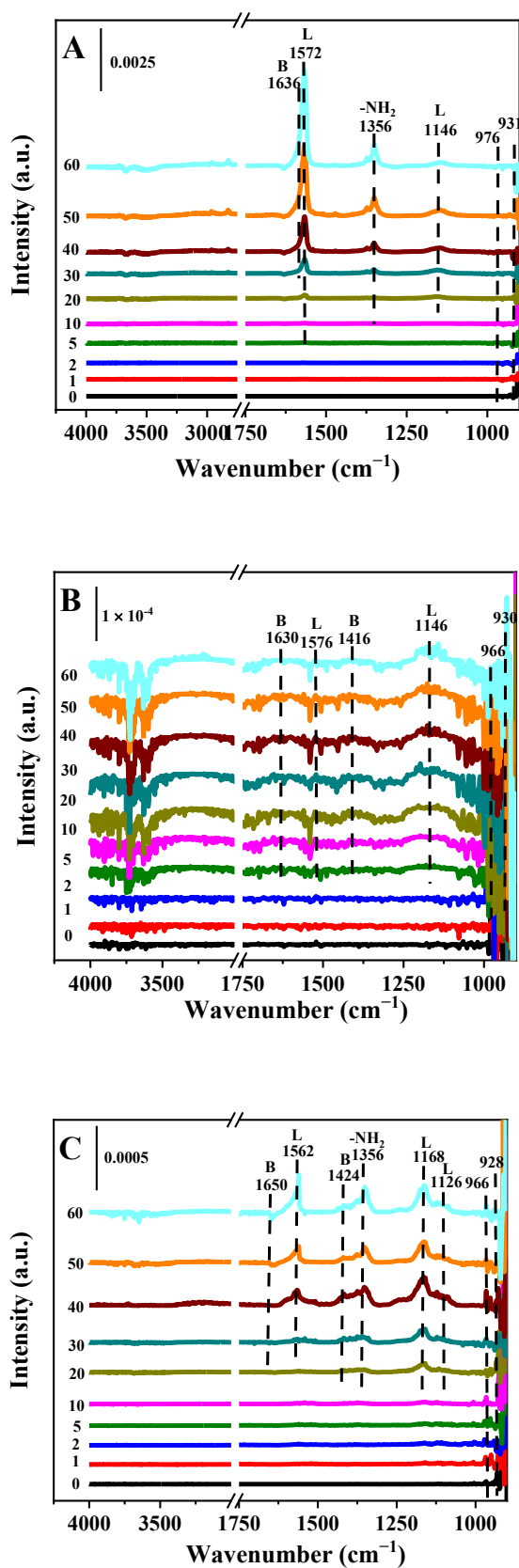


Figure S8. In situ DRIFTS of 500 ppm NH_3 adsorption on $\text{Ce}_{0.1}\text{-Mn-Ti}_{0.1}$ (A), $\text{Ce}_{0.1}\text{-Mn}$ (B) and $\text{Mn-Ti}_{0.1}$ (C) catalysts at 50 °C.

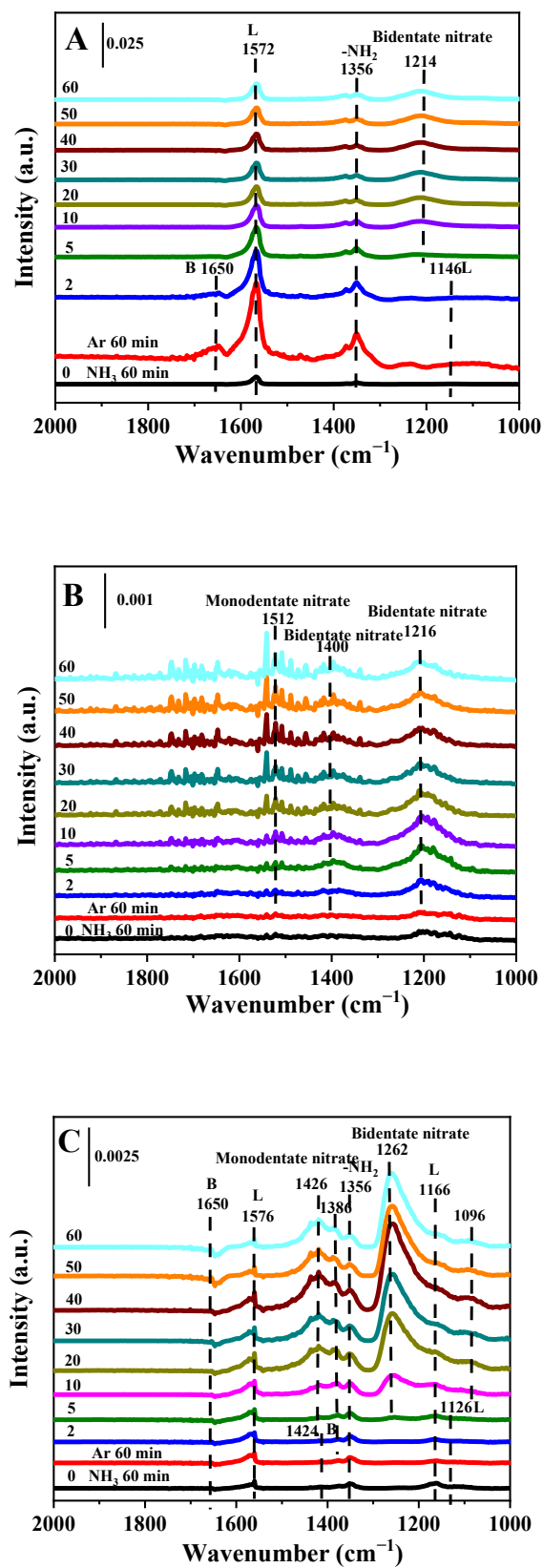


Figure S9. In situ DRIFTS of 500 ppm $\text{NO} + 5\% \text{O}_2/\text{Ar}$ adsorption on $\text{Ce}_{0.1}\text{-Mn-Ti}_{0.1}$ (A), $\text{Ce}_{0.1}\text{-Mn}$ (B) and $\text{Mn-Ti}_{0.1}$ (C) catalysts after adsorption of 500 NH_3/Ar at 50°C .