

Supporting information

# Ni-Based SBA-15 Catalysts Modified with CeMnO<sub>x</sub> for CO<sub>2</sub> Valorization via Dry Reforming of Methane: Effect of Composition on Modulating Activity and H<sub>2</sub>/CO Ratio

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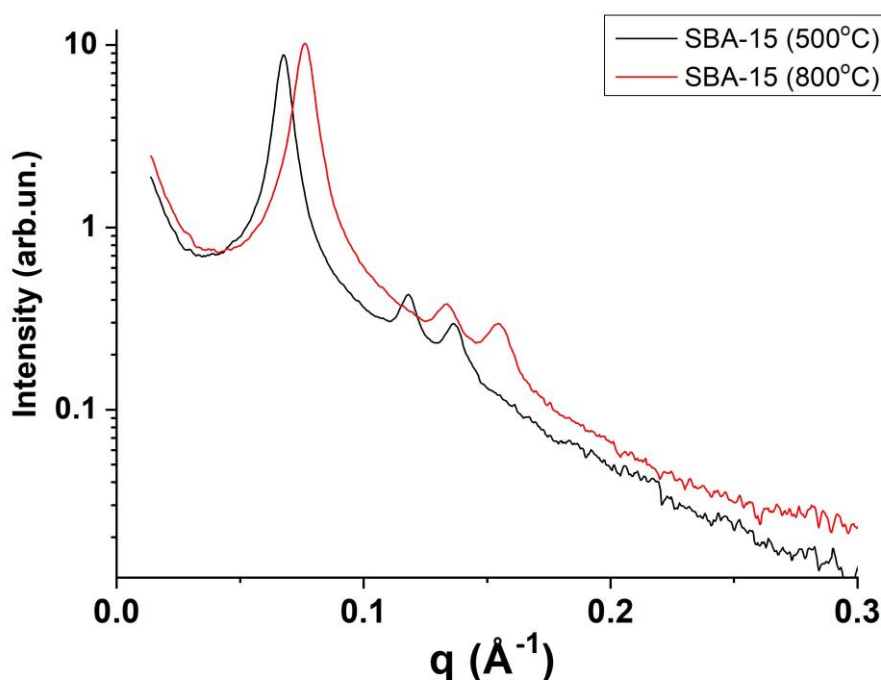
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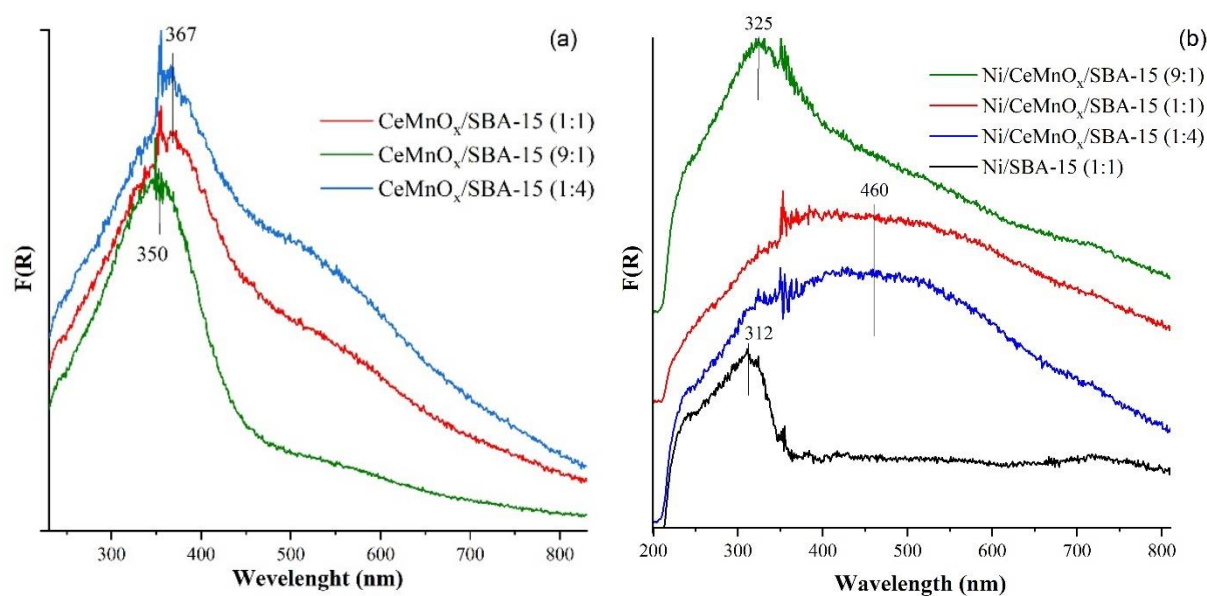
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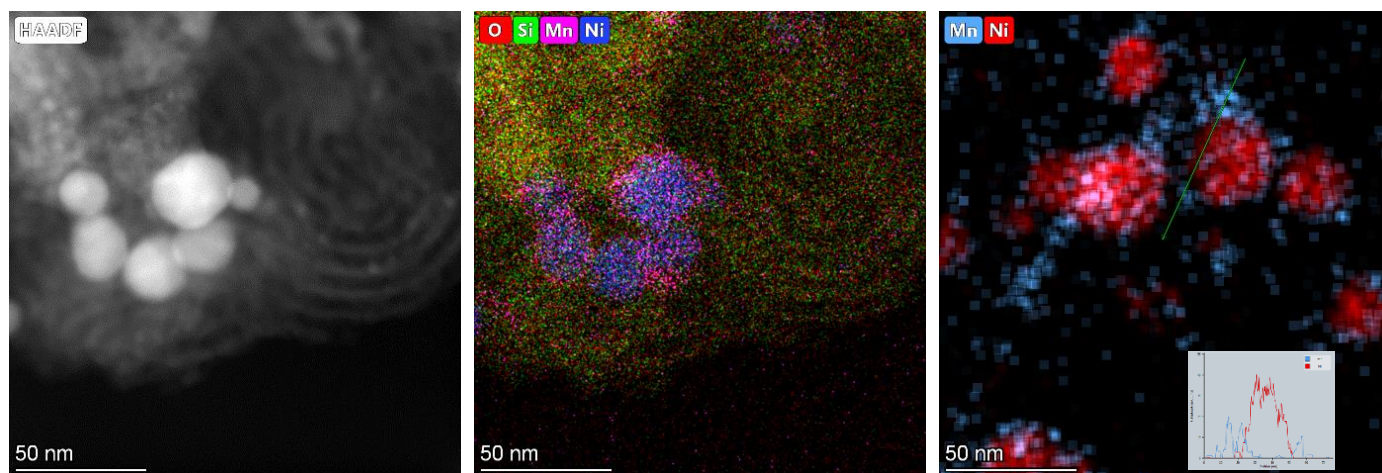
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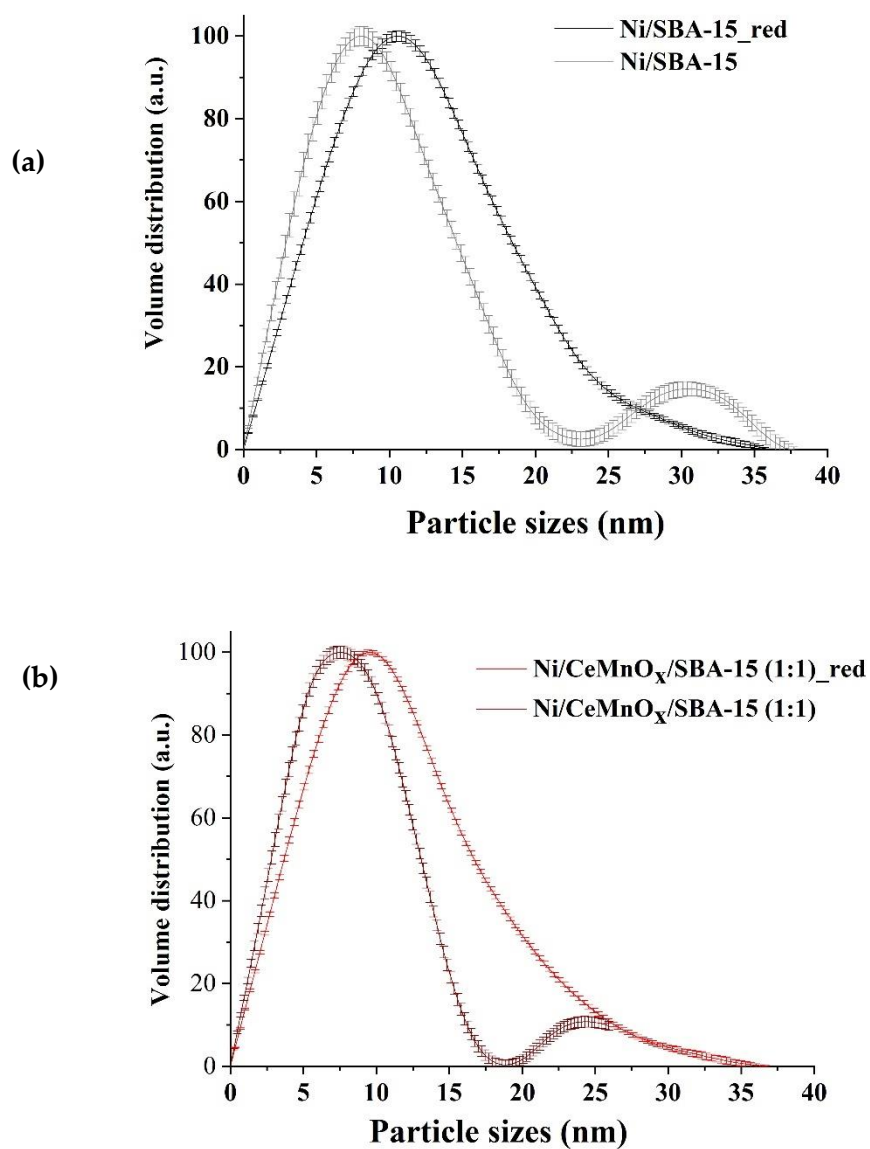
**Figure S1.** SAXS patterns for SBA-15, calcined at 500 and 800 °C.



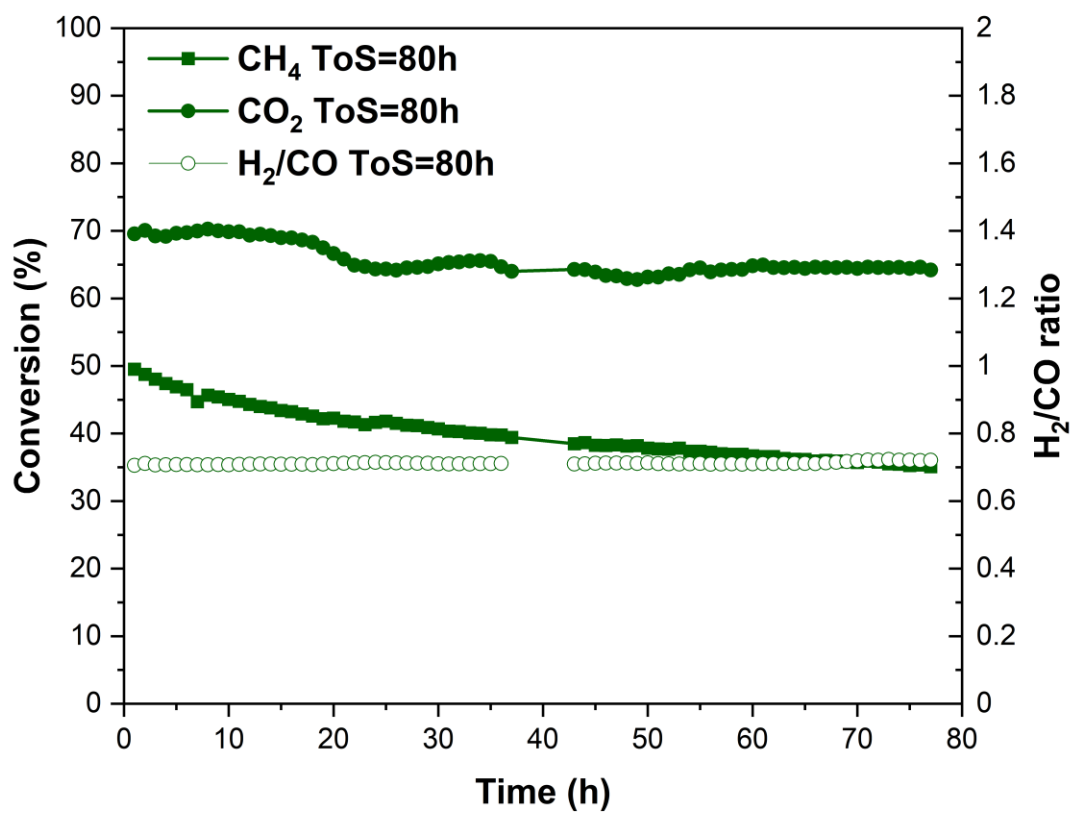
**Figure S2.** UV-vis diffuse reflectance spectra for CeMnO<sub>x</sub>/SBA-15 with different Ce/Mn molar ratios (a) and the corresponding Ni/CeMnO<sub>x</sub>/SBA-15 catalysts (b).



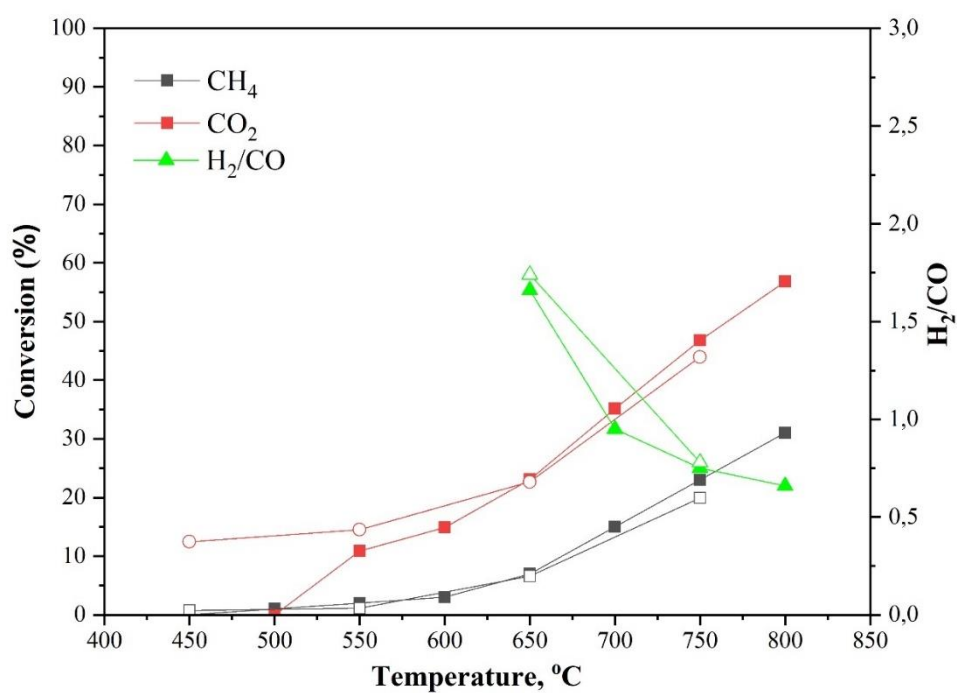
**Figure S3.** HR TEM of Ni/CeMnO<sub>x</sub>/SBA-15 (1:4) catalyst reduced at 700 °C



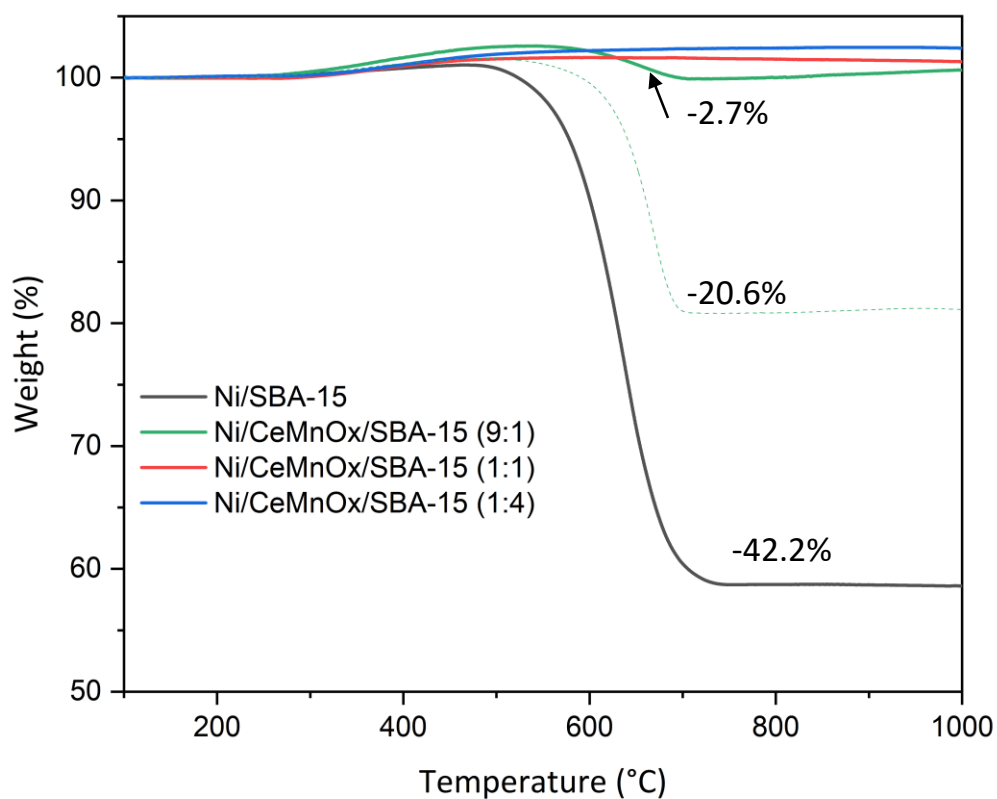
**Figure S4.** Particle size distribution of calcined and reduced Ni catalysts (a) Ni/SBA-15, (b) Ni/CeMnO<sub>x</sub>/SBA-15 (1:1) based on SAXS data.



**Figure S5.** Long-run DRM tests on Ni/CeMnO<sub>x</sub>/SBA-15 (9:1) at 650 °C during 80 h time on stream (ToS).



**Figure S6.** Temperature dependences of CH<sub>4</sub> and CO<sub>2</sub> conversions and H<sub>2</sub>/CO ratio for Ni/LaMnO<sub>x</sub>/SBA-15 (1:1) catalyst. Filled symbols – heating, empty symbols – cooling.



**Figure S7.** TGA for samples after 24 h of time-on-stream. Black, blue, red, and green colors correspond to Ni/SBA-15, Ni/CeMnO<sub>x</sub>/SBA-15 (1:4), Ni/CeMnO<sub>x</sub>/SBA-15(1:1), Ni/CeMnO<sub>x</sub>/SBA-15 (9:1). The green dashed line refers to the long-run on Ni/CeMnO<sub>x</sub>/SBA-15 (9:1) at 650 °C during 80 h.