Supplementary Information for Catalyst-887552

The time on stream measured CO$_2$ methanation performance as functions of the catalyst used and reaction temperature for the averaged results shown in Figures 7, 8, 9, and 10 are provided in Figures S1, S2, and S3. In Figures S1, S2, and S3, the H$_2$ efficiency $X_{H_2}$ is the same as $\eta_{H_2}$ in the manuscript. In addition to CO$_2$ conversion, H$_2$ efficiency, CH$_4$ yield, and CO yield, the CH$_4$ and CO selectivities are also included in Figures S1, S2, and S3.
Figure S1 Time on stream measured CO₂ methanation performance as functions of the Ru loading and reaction temperature. (a) CO₂ conversion, (b) H₂ efficiency, (c) CH₄ selectivity, (d) CO selectivity, (e) CH₄ yield, and (f) CO yield.
Figure S2 Time on stream measured CO$_2$ methanation performance as functions of the Ru-Ni catalysts and reaction temperature. (a) CO$_2$ conversion, (b) H$_2$ efficiency, (c) CH$_4$ selectivity, (d) CO selectivity, (e) CH$_4$ yield, and (f) CO yield.
Figure S3 Time on stream measured thermal stability test of 1wt%Ru-10wt%Ni/Al₂O₃ catalyst under three continuous ascending-descending temperature change cycles between 250 and 550°C. (a) CO₂ conversion, (b) H₂ efficiency, (c) CH₄ selectivity, (d) CO selectivity, (e) CH₄ yield, and (f) CO yield.