

Supplementary Materials

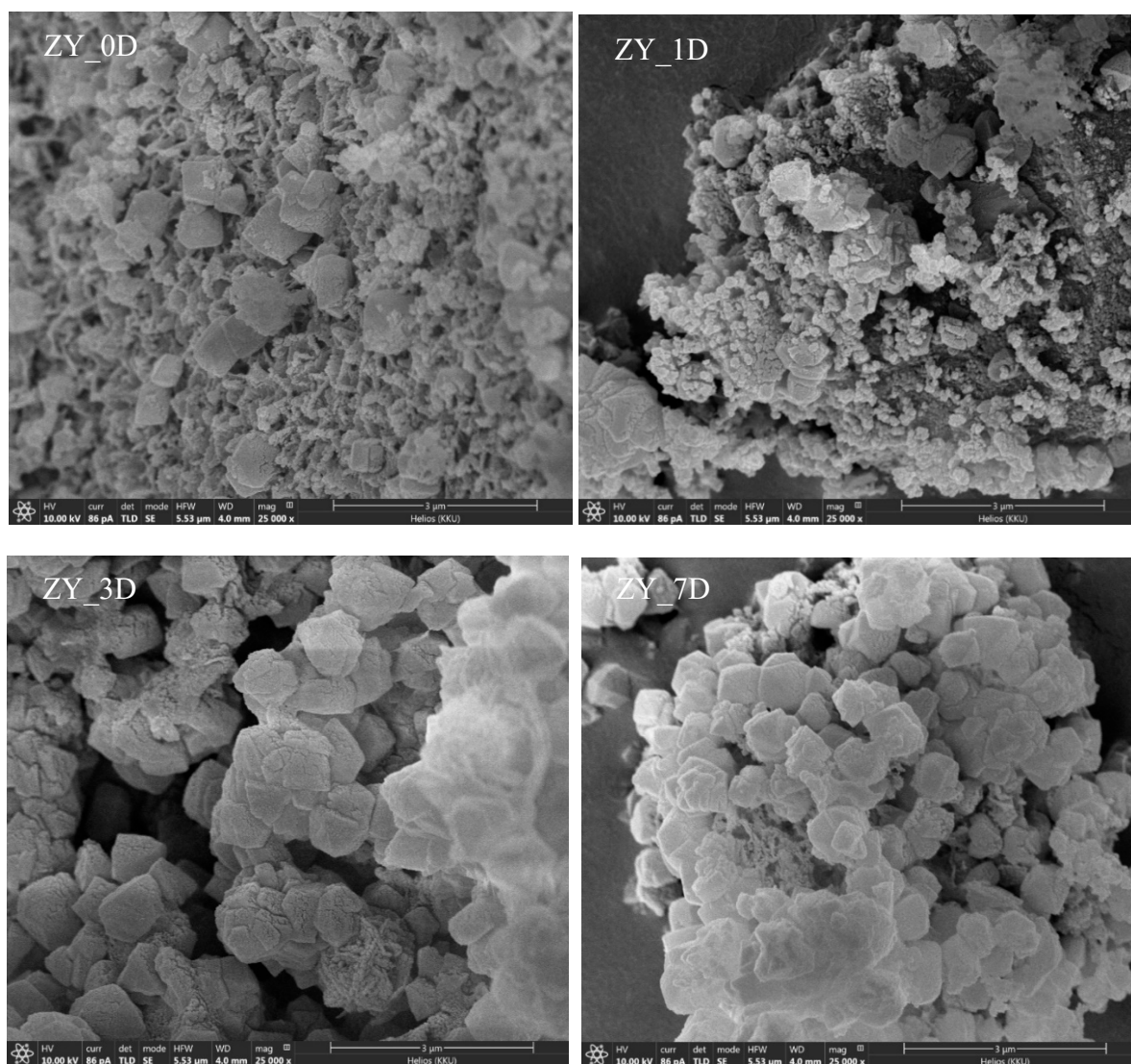
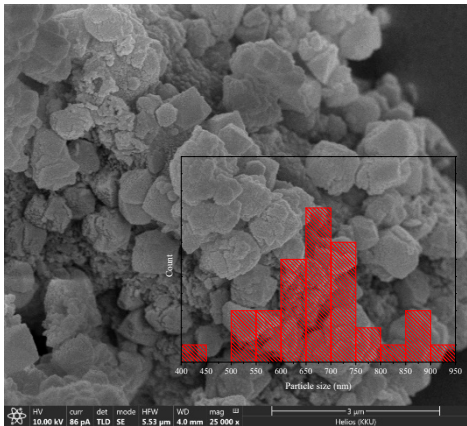
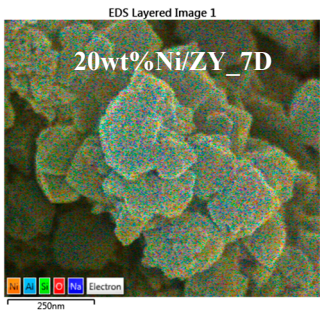
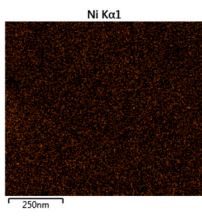
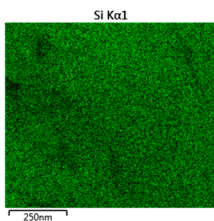
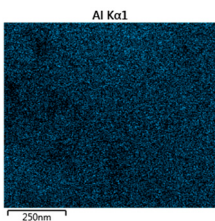
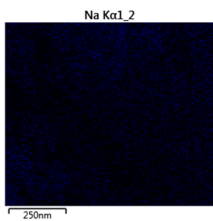
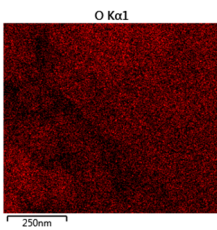
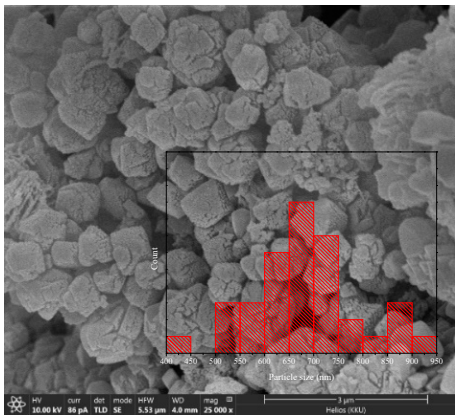
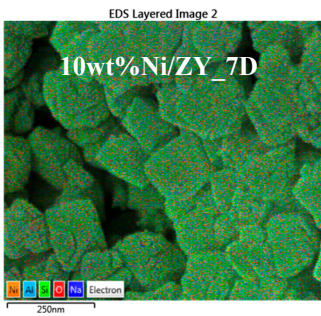
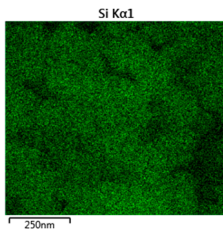
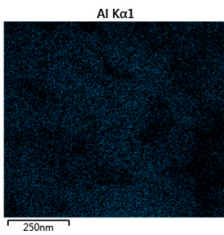
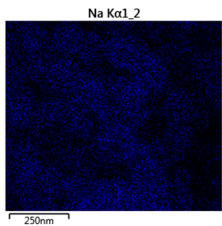
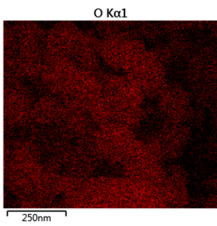
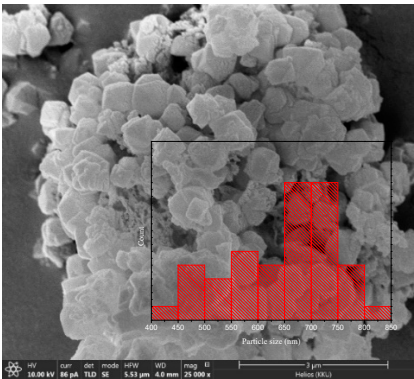
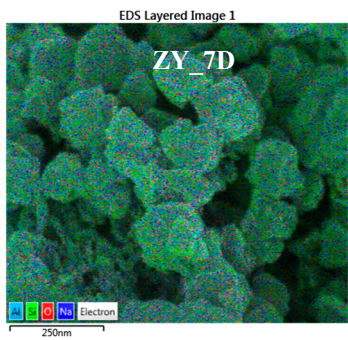


Figure S1. SEM images of zeolite NaY with different aging times (0, 1, 3 and 7 days).



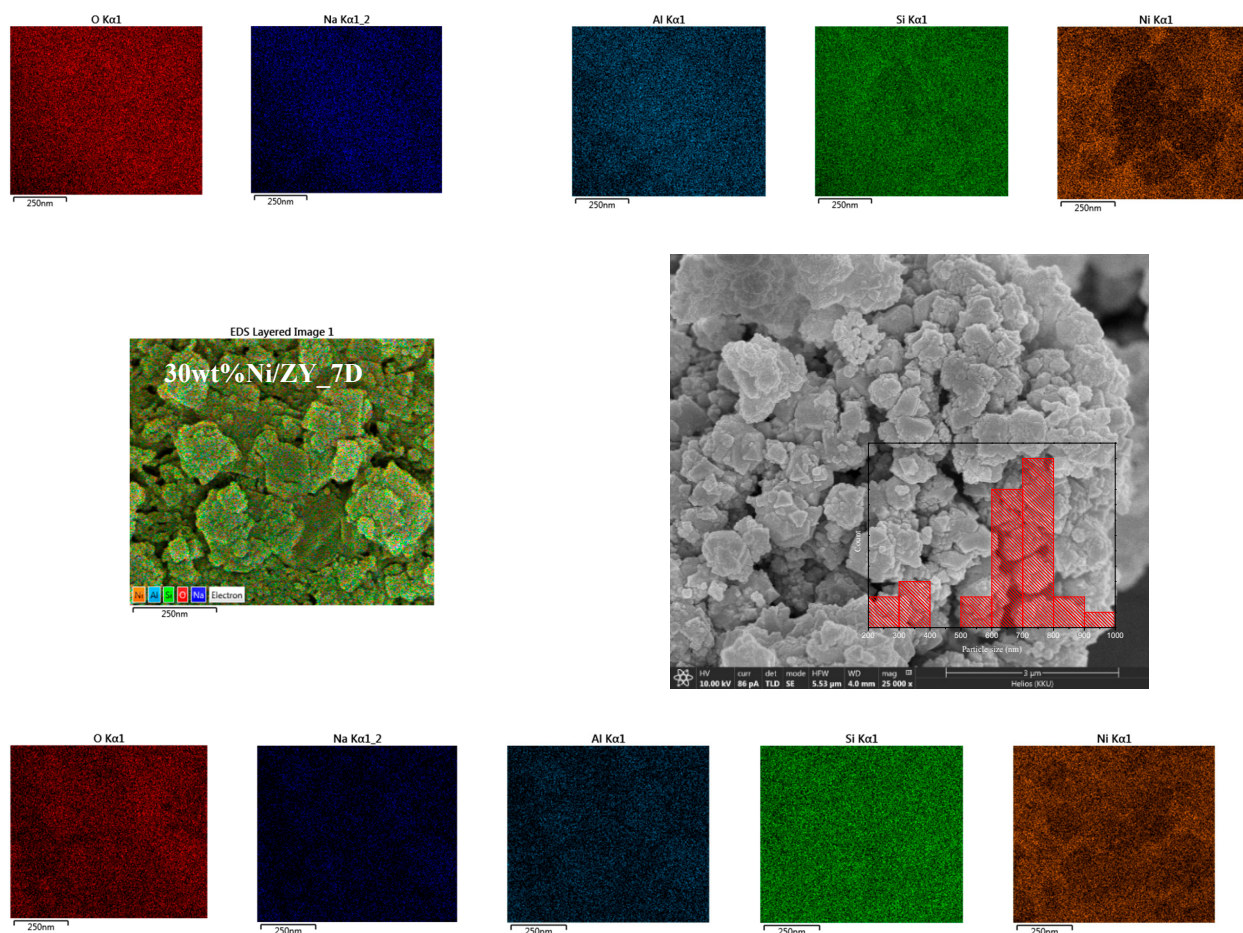
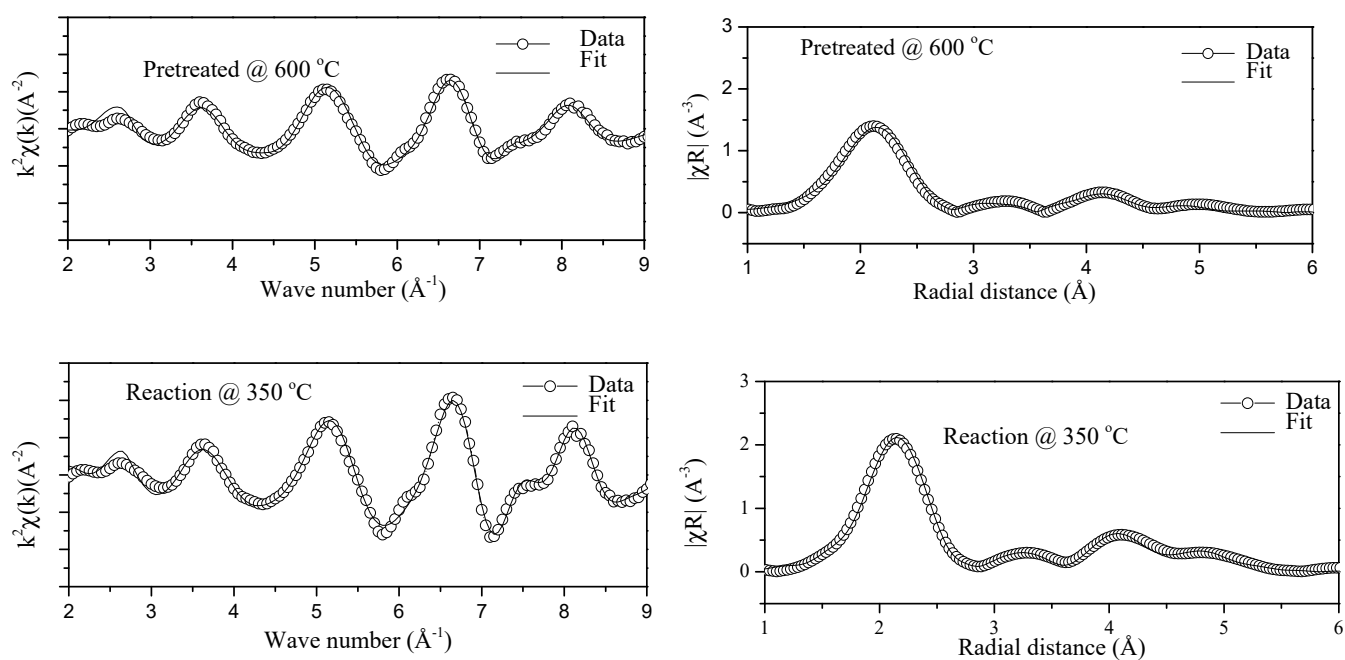


Figure S2. SEM images and elemental mapping of zeolite NaY support (ZY_7D), with 10, 20 and 30wt%Ni/ZY_7D catalysts.



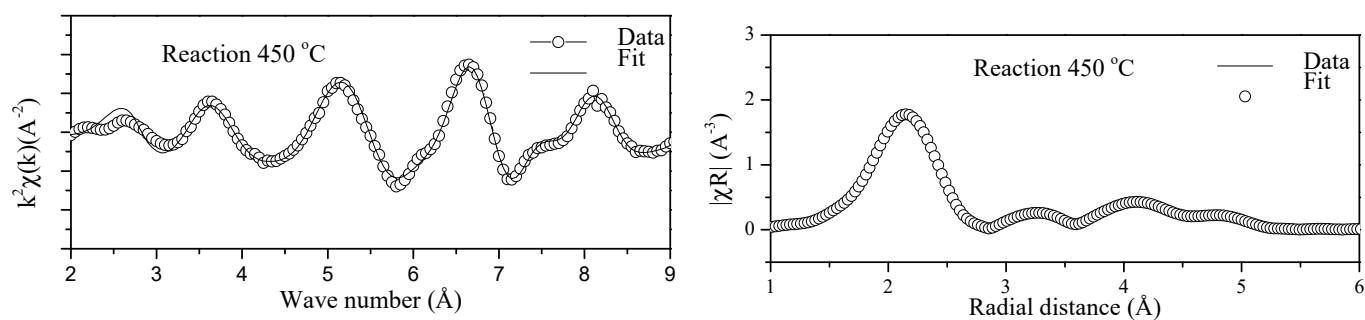


Figure S3. Ni K-edge EXAFS oscillation data with $k^2\chi(k)$ (left hand side) and Fourier transformation data of Ni K-edge EXAFS for 30wt%Ni/ZY_7D.

Table S1. The best fitting parameters obtained from 30wt%Ni/ZY_7D during CO₂ methanation.

Sample	Paths	N	S ₀ ²	σ ²	R (Å)
30wt%Ni/ZY_7D pretreated@600 °C	Ni-Ni	12	0.778	0.01803	2.483
30wt%Ni/ZY_7D reaction@350 °C	Ni-Ni	12	0.705	0.01264	2.481
30wt%Ni/ZY_7D reaction@450 °C	Ni-Ni	12	0.700	0.01443	2.479