

CO₂ hydrogenation to light olefins over Zn-Zr/Support-SAPO-34:

Comparison of different supports

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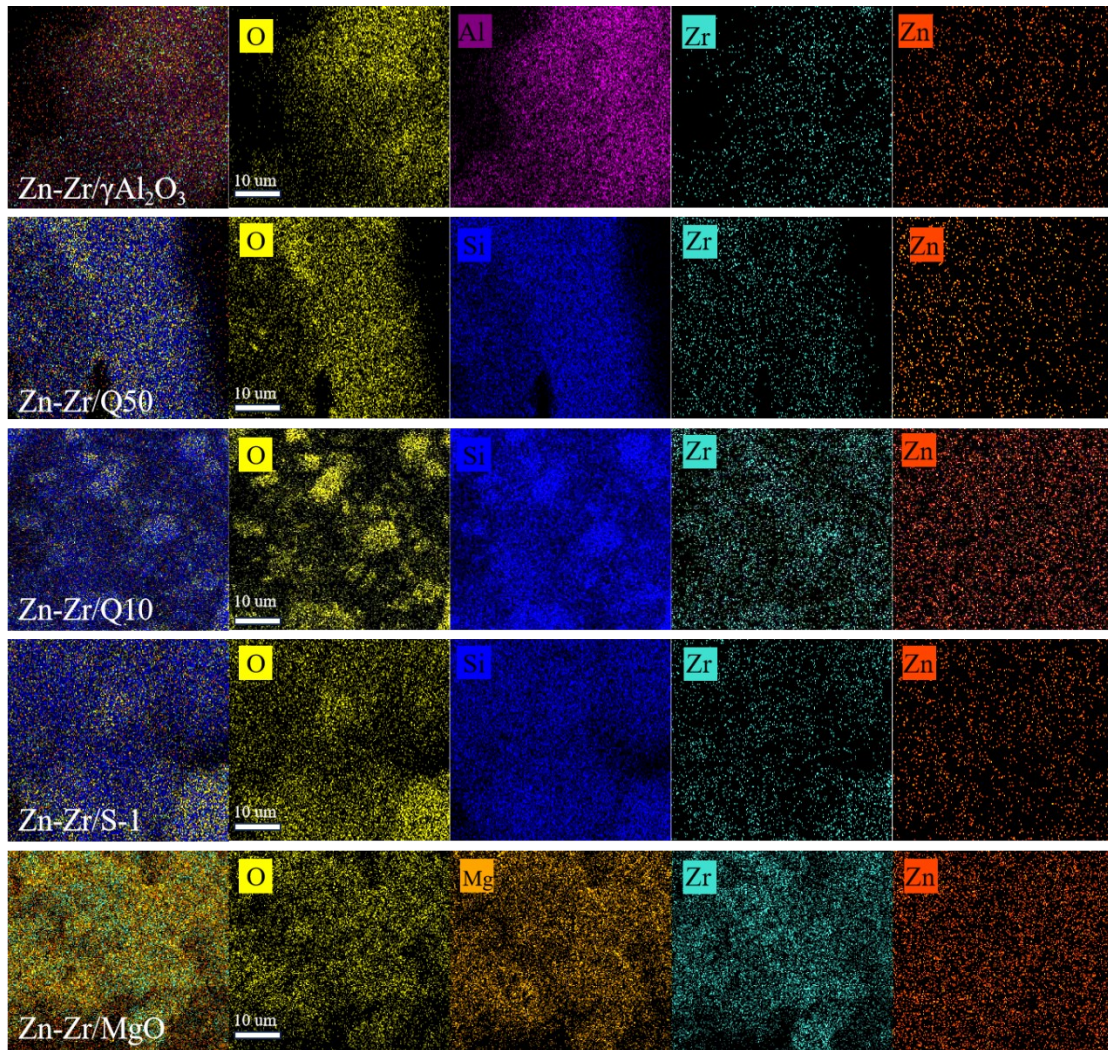


Fig. S1 The elemental mapping images of Zn-Zr/ γ Al₂O₃, Zn-Zr/Q50, Zn-Zr/Q10, Zn-Zr/S-1 and Zn-Zr/MgO.

Table S1 The Relationship between CO₂ chemisorption, H₂ dissociative adsorption and catalytic activity, light olefin selectivity using different supports

Zn-Zr/Support	CO ₂ medium and strong adsorption (mmol/g)	H ₂ strong adsorption (mmol/g)	Zn-Zr/Support-SAPO-34	
			CO ₂ Con. (%)	C ₂ -C ₄
Zn-Zr/Q50	0.120	0.036	9.2	28.1
Zn-Zr/Q10	0.150	0.053	11.4	39.0
Zn-Zr/S-1	0.164	0.047	16.2	14.7
Zn-Zr/MgO	0.185	0.049	8.8	4.8
Zn-Zr/ γ Al ₂ O ₃	0.738	0.420	24.0	30.4

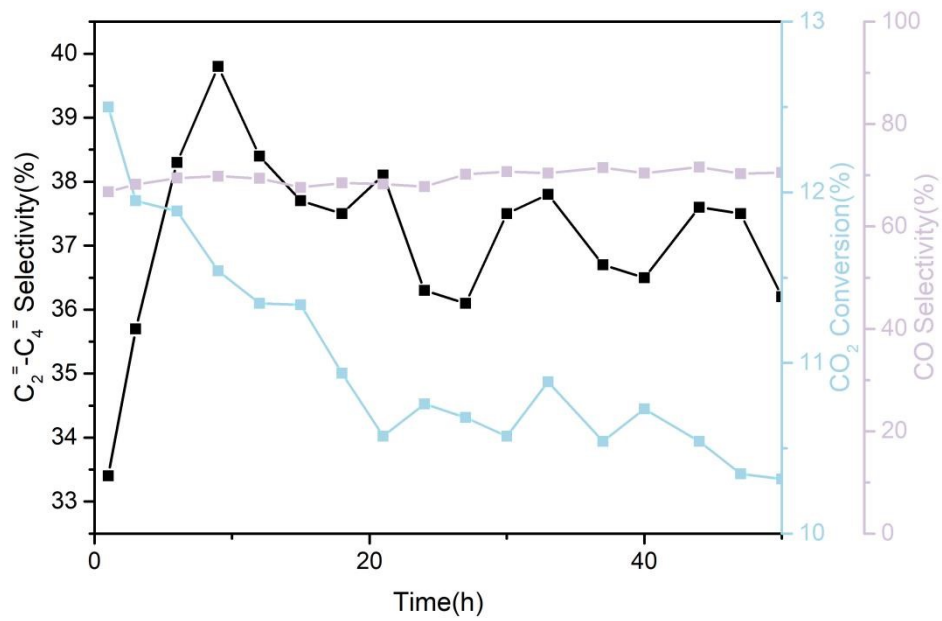


Fig. S2 Stability of Zn-Zr/Q10-SAPO-34 catalyst with time-on-stream. (Reaction conditions: 3.0 MPa, 380 °C, gas flow = 40 mL/min, gas mixture: Ar:CO₂:H₂ = 0.04:0.23:0.73)