SUPPORT INFORMATION

Tuning the Ni site location of bifunctional Ni-based catalysts for improving the performance on ethylene oligomerization

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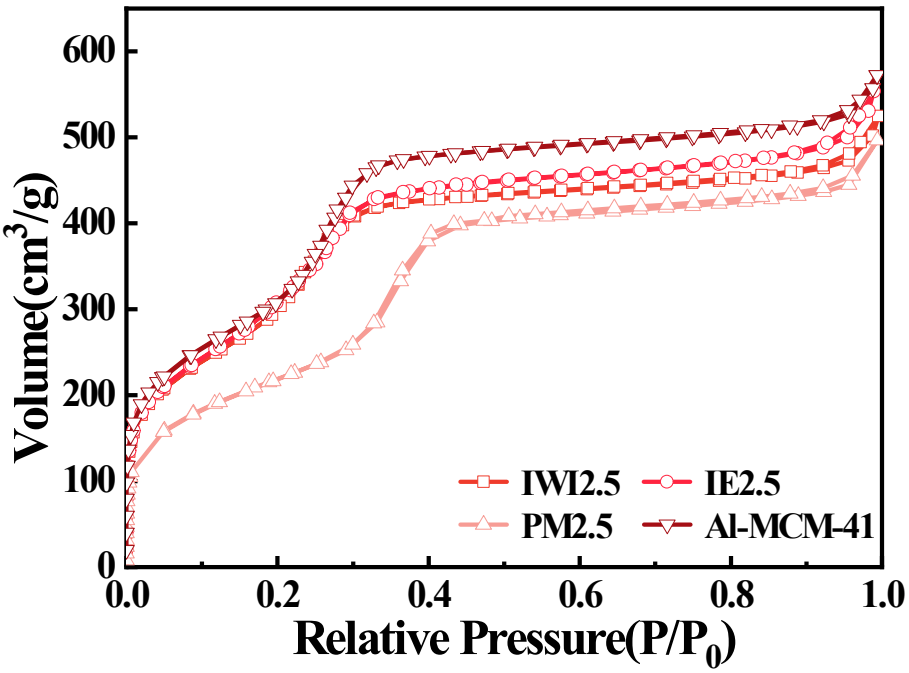

Figure S1. N_2 adsorption and desorption isotherms of Al-MCM-41-15 support and different Ni positioning catalysts.

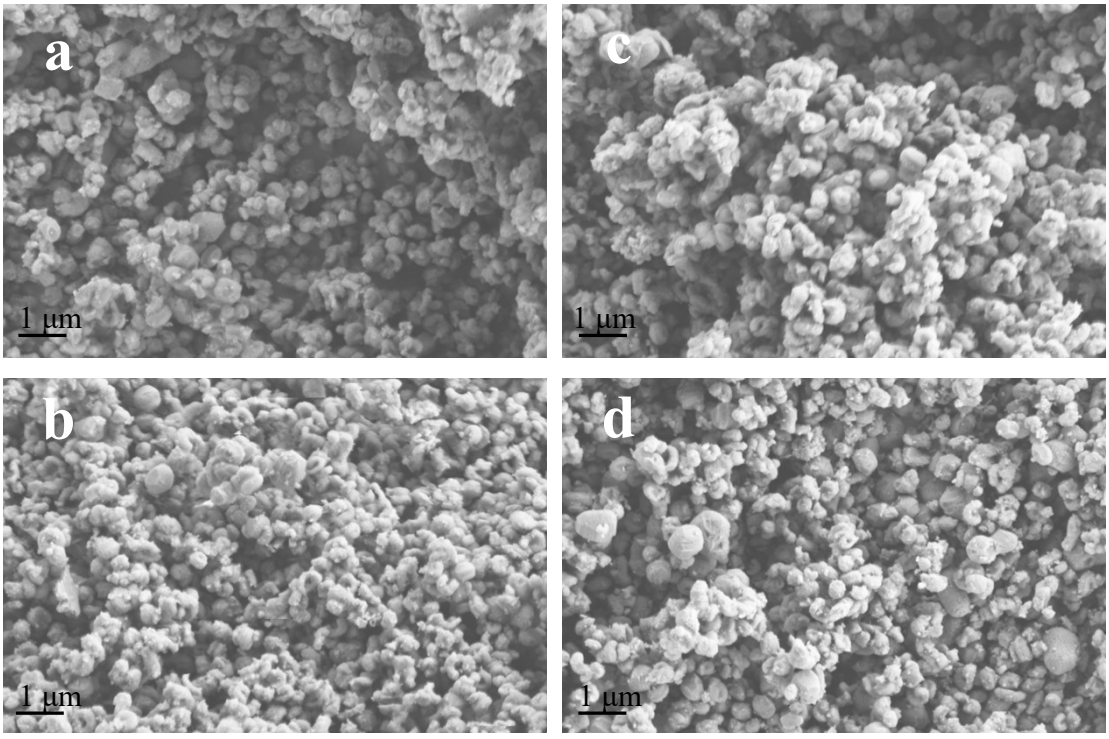

Figure S2. SEM image of Al-MCM-41-15 support and different nickel positioning catalysts.

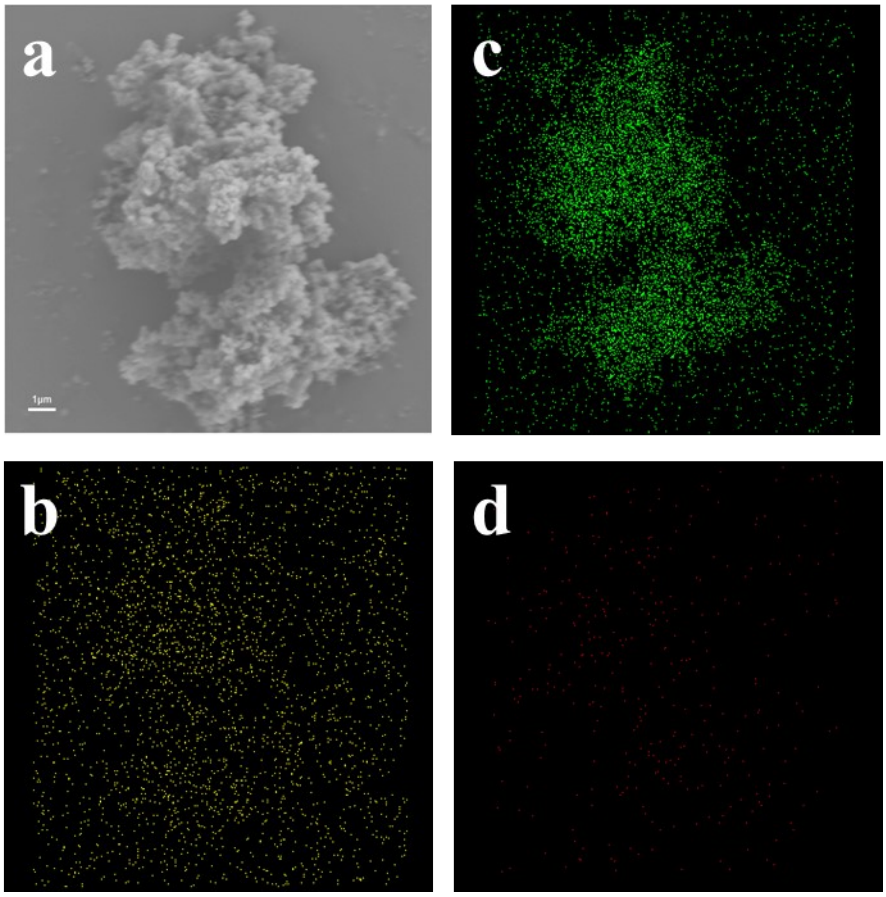

Figure S3. EDS image of Al (b), Si (c), and Ni (d) on the surface of Al-MCM-41 (a) in IWI-2.5% catalyst.

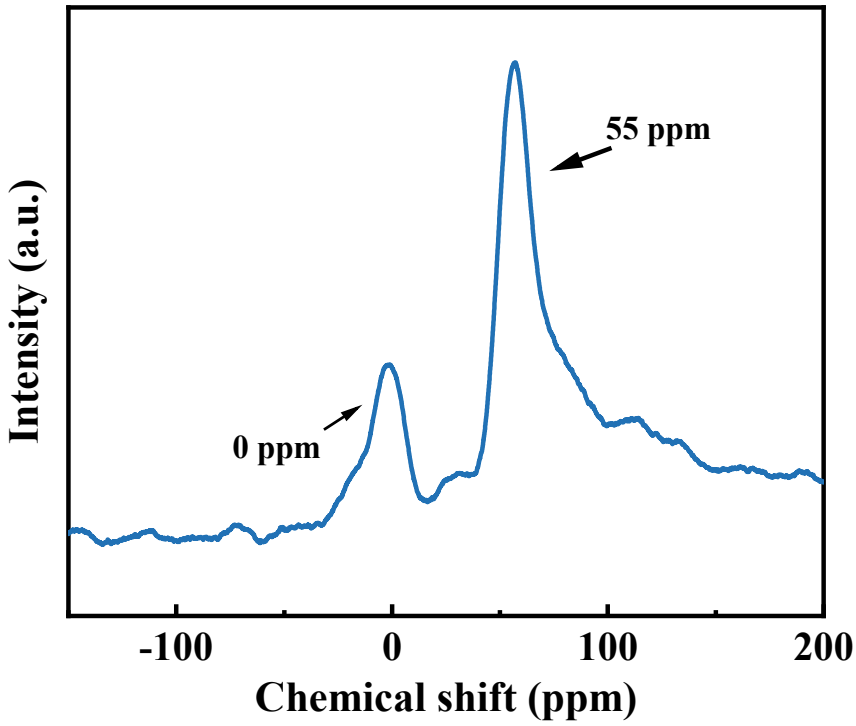

Figure S4. ^{27}Al MAS-NMR spectra of Al-MCM-41-15 support.

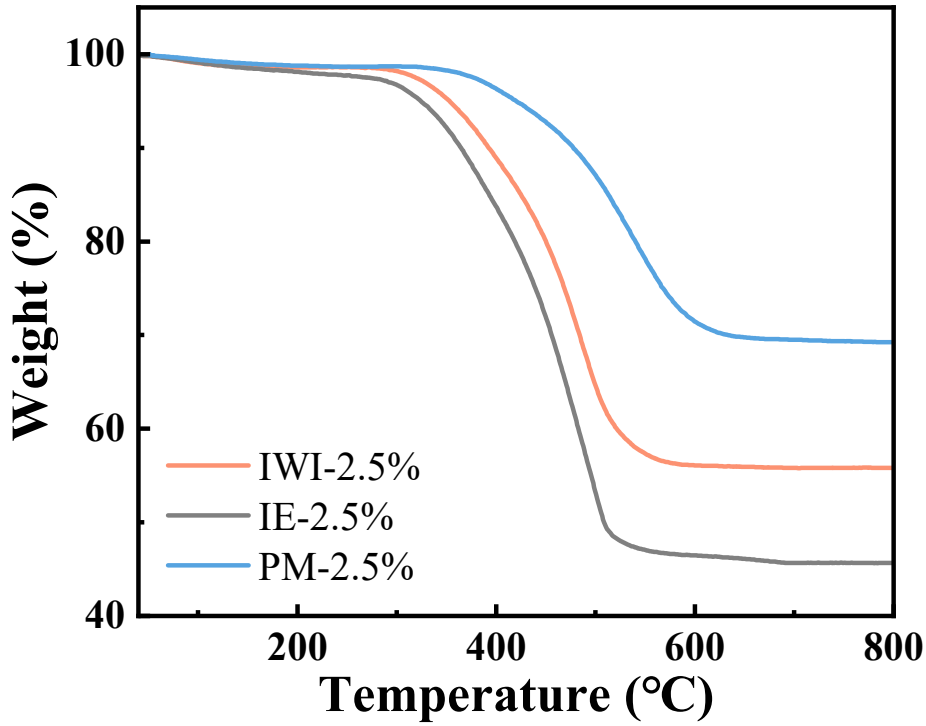

Figure S5. Thermogravimetric curves for different nickel positioning catalysts.

Table S1. Acid site distribution of Al-MCM-41-15 support and different nickel positioning catalysts (μmol g^{-1})

Sample	B 250 °C	L 250 °C	Bs 300 °C	Ls 300 °C	B+L 250 °C	Bs+Ls 300 °C
IWI-2.5%	39	175	36	134	214	170
IE-2.5%	60	199	46	177	259	216
PM-2.5%	41	120	39	76	161	115
Al-MCM-41-15	70	103	53	90	173	143

Table S2. The influence of different catalysts on ethylene oligomerization

Catalyst	Conversion	Oligomers(wt%)					
		C_4	C_6	C_8	C_{10}	C_{12}	Other
IWI-2.5%	93.1	33.2	27.4	19.0	9.2	4.1	7.1
IE-2.5%	92.8	31.9	27.9	17.6	9.0	3.6	10.0
PM-2.5%	69.4	52.3	24.6	10.0	3.8	1.6	7.7
Al-MCM-41-15	4.2	70.2	15.6	0.0	0.0	0.0	14.2

Table S3. Effect of the residence time and the pressure on the ethylene conversion and oligomer distribution

Pressure (MPa)	WHSV (h^{-1})	Conversion	Oligomers(wt%)					
			C_4	C_6	C_8	C_{10}	C_{12}	Other
3	5.0	32.3	68.7	14.6	5.6	1.7	0.0	9.4
3	4.0	50.8	58.2	20.5	9.7	3.8	0.0	7.8
3	3.0	72.6	43.6	24.1	16.3	5.3	2.4	8.3
3	2.0	93.1	33.2	27.4	19.0	9.2	4.1	7.1
1	2.0	53.2	74.6	13.0	2.3	1.5	0.0	8.6
2	2.0	87.9	53.4	23.2	10.4	4.2	1.3	7.5
4	2.0	95.3	31.2	30.6	20.6	6.0	4.8	6.8