Supporting Information

Enhanced sintering resistance of bimetal/SBA-15 catalysts with promising activity under low temperature for CO methanation

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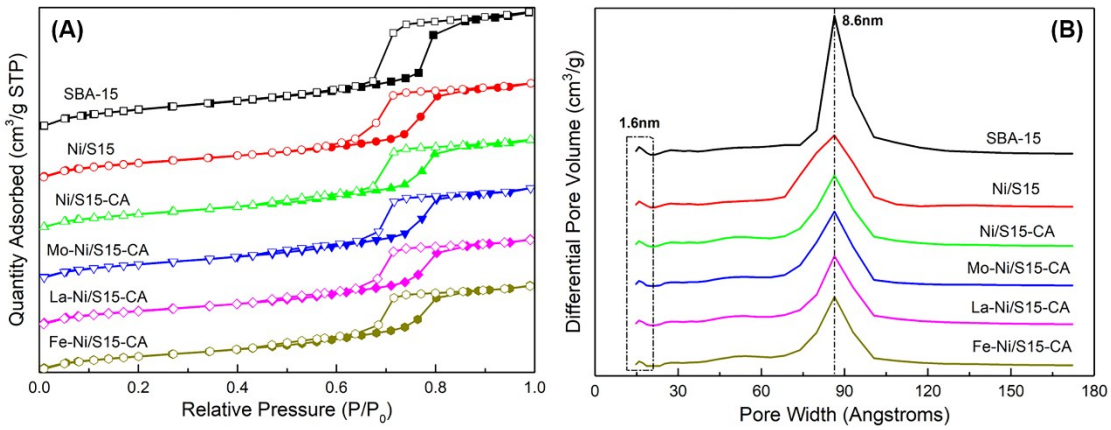

Figure S1 The N_2 physisorption-desorption curve (A) and pore size distribution (B) of the catalysts.

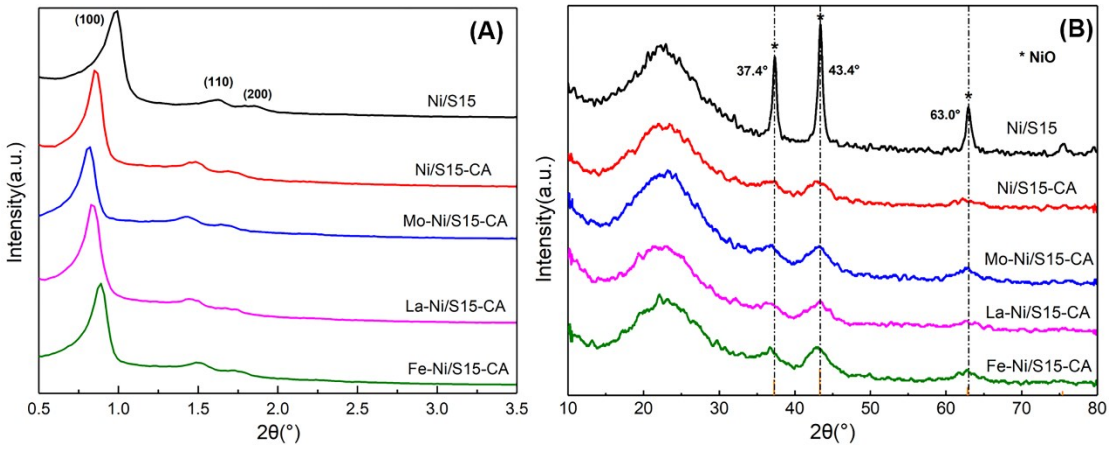

Figure S2 XRD patterns of catalysts. (A) Small angle XRD patterns (B) wide angle XRD patterns.

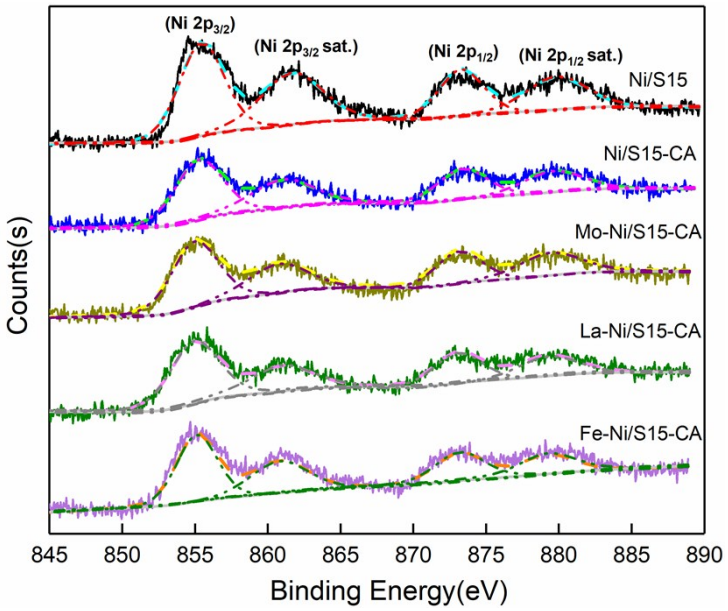

Figure S3 The XPS spectra of Ni 2p for catalysts

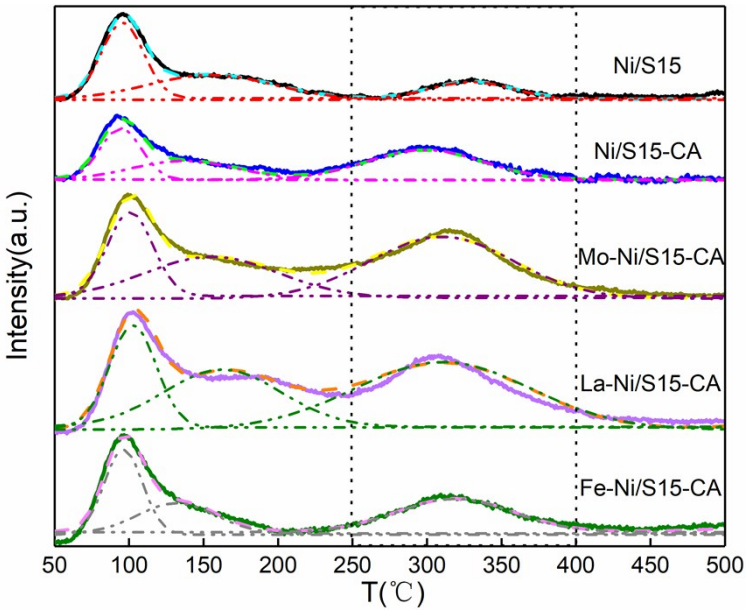

Figure S4 The CO-TPD curves of catalysts

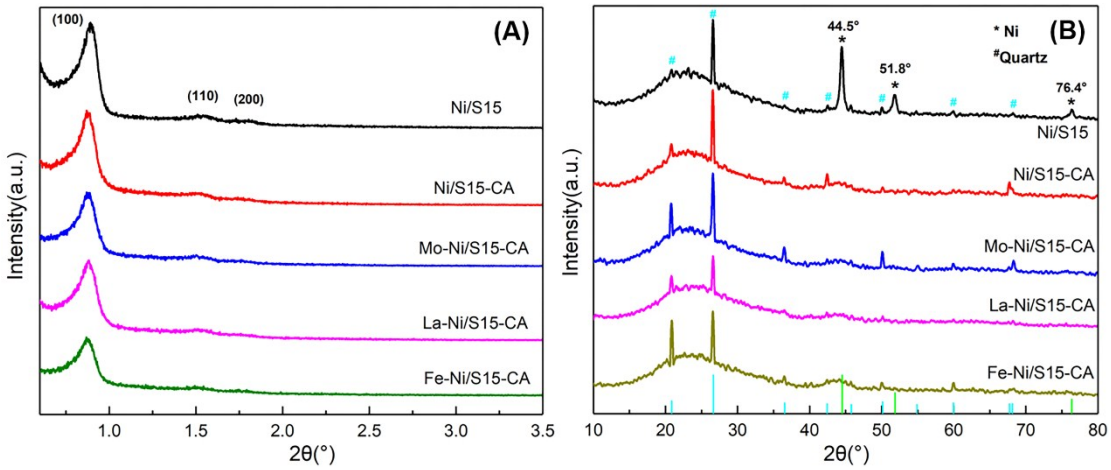

Figure S5 XRD patterns of the used catalysts after calcination. (A) Small angle XRD patterns (B) wide angle XRD patterns. Characteristic diffraction peaks of the quartz are observed obviously in all the XRD patterns of the used catalysts due to the use of quartz during the evaluation of the catalytic performance.

Table S1 The physicochemical properties of support and catalysts

Samples	S_{BET} [a] (m^2/g)	S_{Micro} [b] (m^2/g)	V_{total} [c] (cm^3/g)	V_{Micro} [d] (cm^3/g)	APD [e] (nm)
SBA-15	838	118	1.21	0.04	6.2
Ni/S15	689	96	1.00	0.03	5.9
Ni/S15-CA	654	67	0.93	0.02	5.7
Mo-Ni/S15-CA	659	62	0.96	0.02	5.7
La-Ni/S15-CA	626	71	0.90	0.02	5.6
Fe-Ni/S15-CA	608	72	0.89	0.02	5.6

a BET surface area

b Microporous surface area, obtained from t-Plot method

c Total pore volume, obtained from BJH isothermal desorption method

d Microporous pore volume, obtained from t-Plot method and D-R equation

e Average pore diameter, obtained from BJH isothermal desorption method

Table S2 The physicochemical properties of the support and the used catalysts after calcination

Samples	S_{BET} [a] (m^2/g)	S_{Micro} [b] (m^2/g)	V_{total} [c] (cm^3/g)	APD [d] (nm)
SBA-15	400	-	0.56	3.9
Ni/S15	548	27	0.79	5.7
Ni/S15-CA	520	26	0.79	5.7
Mo-Ni/S15-CA	483	37	0.71	5.8
La-Ni/S15-CA	465	34	0.61	5.6
Fe-Ni/S15-CA	469	35	0.64	5.6

a BET surface area

b Microporous surface area, obtained from t-Plot method

c Total pore volume, obtained from BJH isothermal desorption method

d Average pore diameter, obtained from BJH isothermal desorption method