Supporting Information for the manuscript

Carbon-Supported $KCoMoS_2$ for Alcohol Synthesis from Synthesis Gas

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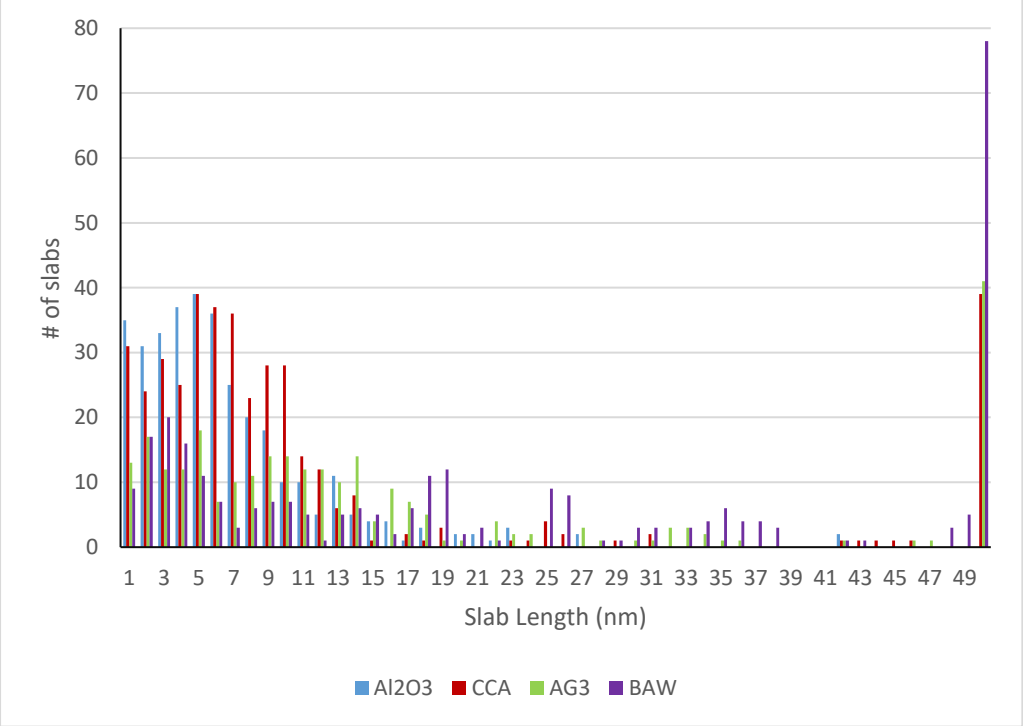

Figure S1. Slab length distribution obtained from minimum 300 individual slabs per sample as recorded from TEM images.

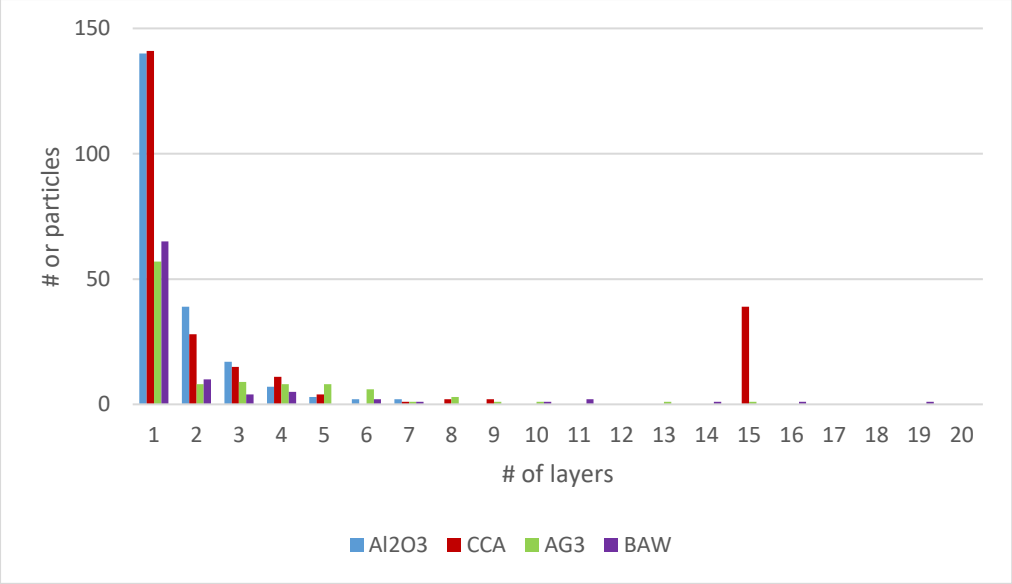

Figure S2. Slab degree of stacking distribution obtained from minimum 300 individual slabs per sample as recorded from TEM images.

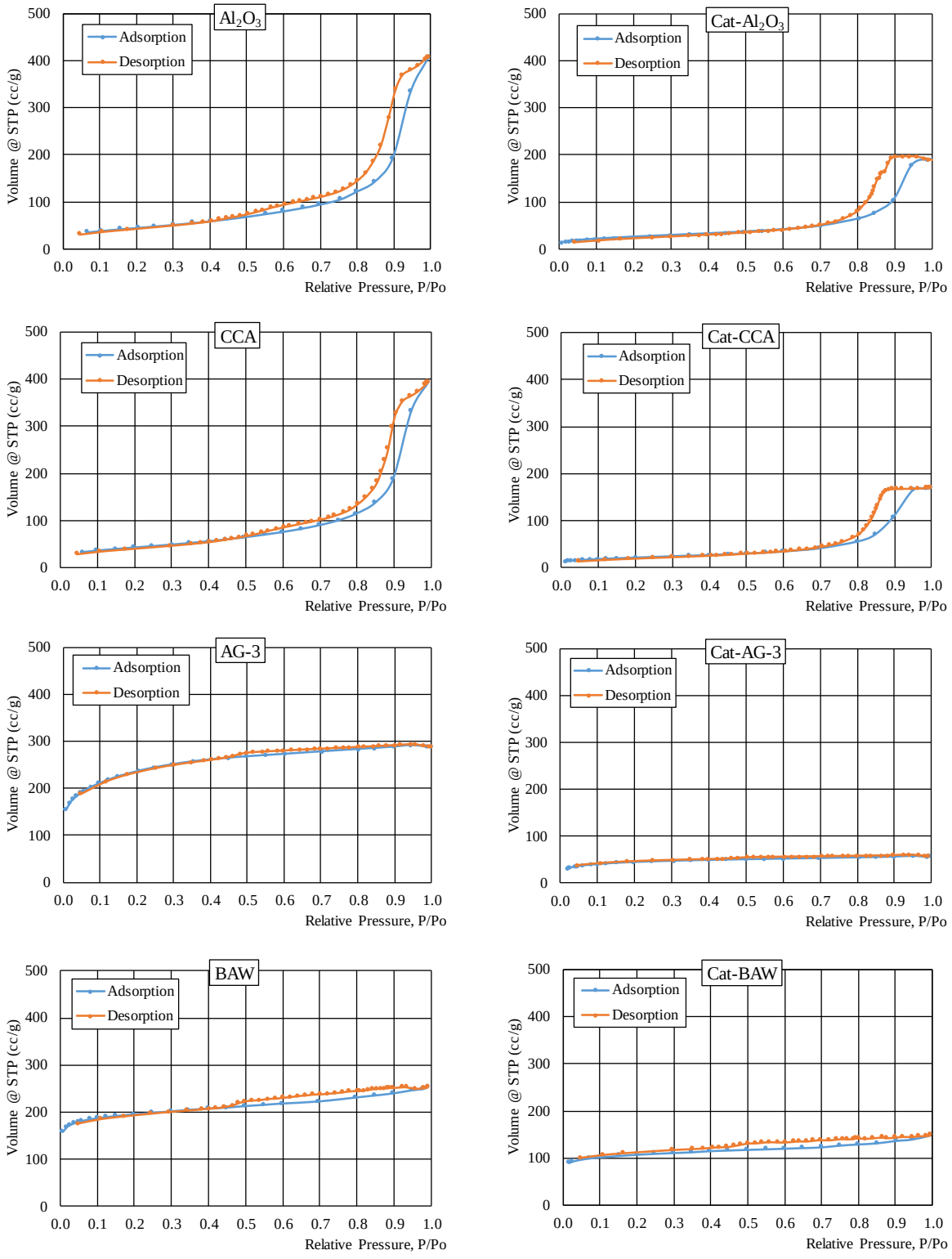

Figure S3. N_2 adsorption/desorption isotherms for Al_2O_3, CCA, AG-3, and BAW support materials and corresponding $KCoMoS_2$-supported catalysts. Catalysts abbreviated as Cat-support.

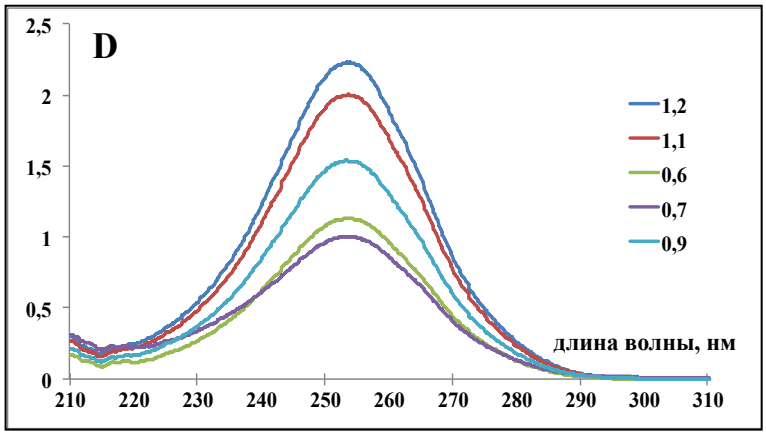

Figure S4. UV absorption spectra of pyridine in octane. Legend shows the concentration in mol/L.

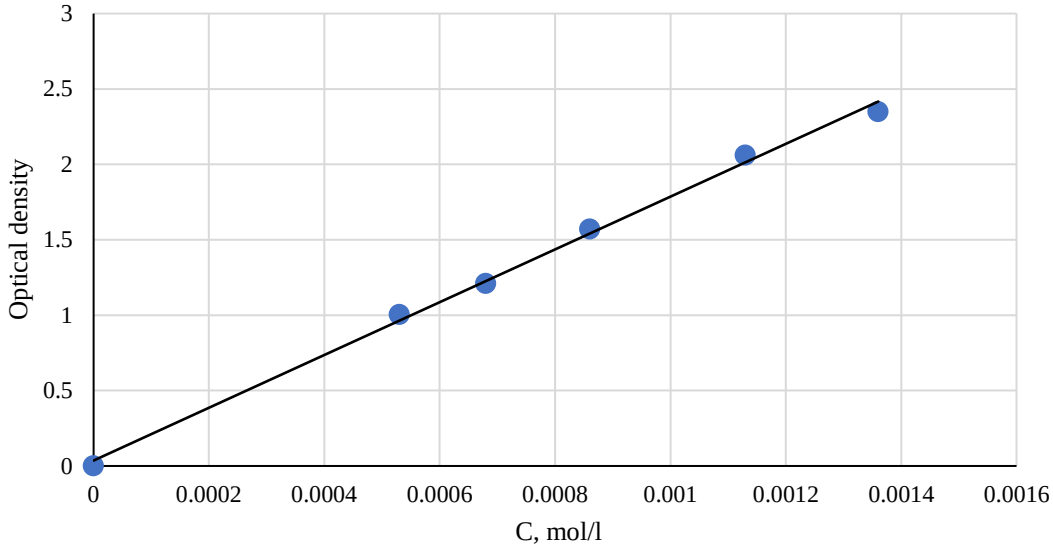

Figure S5. Calibration dependence of the UV signal (D) of the solution on the concentration of pyridine (mol/L) at 252 nm. $y = 1749.8x + 0.0359$; $R^2 = 0.997$.

Table S1. Catalytic selectivities.

Al2O3

T, oC	CO2	CH4	C2	C3	C4	MeOH	EtOH	PrOH1	BuOH1	iBuOH	AmOH1	iAmOH	PrOH2	BuOH2
300	9.2%	0.0%	0.0%	0.0%	0.0%	11.2%	23.2%	23.3%	8.7%	14.6%	3.8%	6.0%	0.0%	0.0%
320	12.4%	0.0%	0.0%	0.0%	0.0%	10.8%	22.4%	22.5%	8.4%	14.1%	3.7%	5.7%	0.0%	0.0%
340	15.9%	2.2%	0.4%	0.0%	0.0%	10.1%	20.8%	20.9%	7.8%	13.1%	3.5%	5.4%	0.0%	0.0%
360	24.7%	4.9%	1.0%	0.0%	0.0%	8.5%	17.6%	17.7%	6.6%	11.2%	3.0%	4.6%	0.0%	0.0%

CCA

T, oC	CO2	CH4	C2	C3	C4	MeOH	EtOH	PrOH1	BuOH1	i-BuOH	AmOH1	iAmOH	PrOH2	BuOH2
300	21.0%	6.5%	2.1%	0.0%	0.0%	5.2%	21.3%	21.4%	8.3%	6.5%	3.4%	3.0%	0.6%	0.6%
320	26.0%	6.2%	1.8%	1.0%	0.0%	6.5%	19.5%	18.8%	8.1%	6.2%	2.9%	2.5%	0.5%	0.0%
340	24.7%	8.2%	3.0%	6.3%	2.5%	4.1%	16.8%	15.9%	7.4%	4.7%	2.7%	3.6%	0.0%	0.0%
360	31.0%	5.2%	3.9%	2.1%	1.8%	5.2%	18.1%	16.0%	6.5%	5.9%	2.6%	1.8%	0.0%	0.0%

AG-3

T, oC	CO2	CH4	C2	C3	C4	MeOH	EtOH	PrOH1	BuOH1	i-BuOH	AmOH1	iAmOH	PrOH2	BuOH2
300	24.7%	0.0%	0.0%	0.0%	0.0%	12.1%	29.3%	19.3%	5.8%	5.1%	1.7%	2.1%	0.0%	0.0%
320	28.4%	2.8%	0.0%	0.0%	0.0%	11.0%	26.7%	17.6%	5.3%	4.6%	1.5%	1.9%	0.0%	0.0%
340	23.7%	6.2%	0.0%	0.0%	0.0%	11.2%	27.2%	17.9%	5.4%	4.7%	1.6%	2.0%	0.0%	0.0%
360	17.6%	4.7%	2.6%	0.0%	0.0%	12.0%	29.2%	19.2%	5.8%	5.1%	1.7%	2.1%	0.0%	0.0%

BAW

T, oC	CO2	CH4	C2	C3	C4	MeOH	EtOH	PrOH1	BuOH1	iBuOH	AmOH1	iAmOH	PrOH2	BuOH2
300	9.1%	1.0%	1.3%	0.0%	0.0%	14.1%	35.0%	23.2%	8.1%	0.0%	8.1%	0.0%	0.0%	0.0%
320	8.3%	1.4%	1.7%	0.3%	1.9%	13.9%	34.1%	23.0%	7.8%	0.0%	7.8%	0.0%	0.0%	0.0%
340	12.2%	2.3%	2.0%	1.8%	1.3%	12.7%	31.7%	21.3%	7.4%	0.0%	7.4%	0.0%	0.0%	0.0%
360	14.4%	3.0%	3.5%	1.4%	1.9%	12.1%	30.0%	20.0%	6.7%	0.0%	7.0%	0.0%	0.0%	0.0%

Table S2. α-Factors at 360 °C.

Cat	α1	α2	α3	α4
Al2O3	0.61	0.56	0.50	0.25
CCA	0.67	0.49	0.42	0.20
AG-3	0.61	0.38	0.35	0.22
BAW	0.64	0.39	0.33	0.39