

Supporting Information

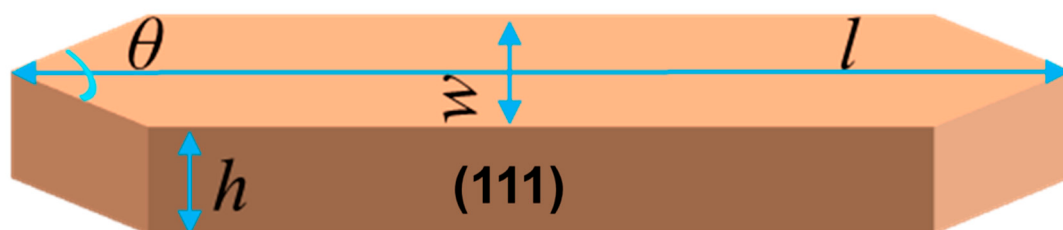
Management of γ -Alumina with High-Efficient {111} External Surfaces for HDS Reactions

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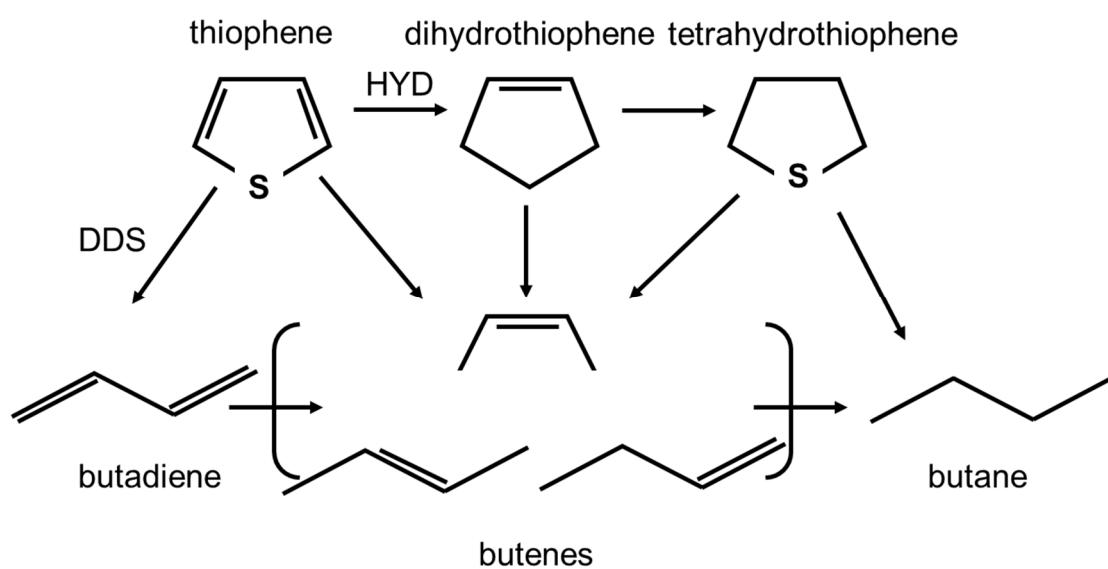
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Scheme S1 Schematic description of γ - Al_2O_3 with the indexing of the dimensional parameters.



Scheme S2 Proposed reaction network of thiophene over HDS catalysts through DDS (direct desulfurization) and HYD (hydrodesulfurization) pathways.

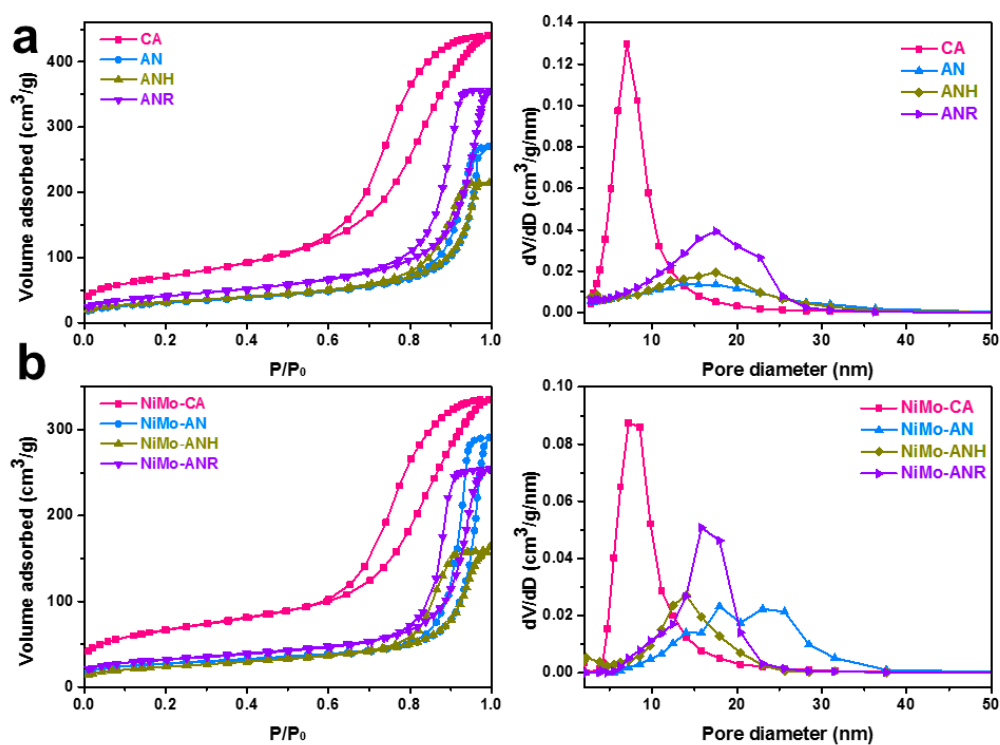


Fig. S1 N₂ adsorption-desorption isotherms and pore size distribution curves for (a) γ -aluminas and (b) NiMo/ γ -alumina catalysts.

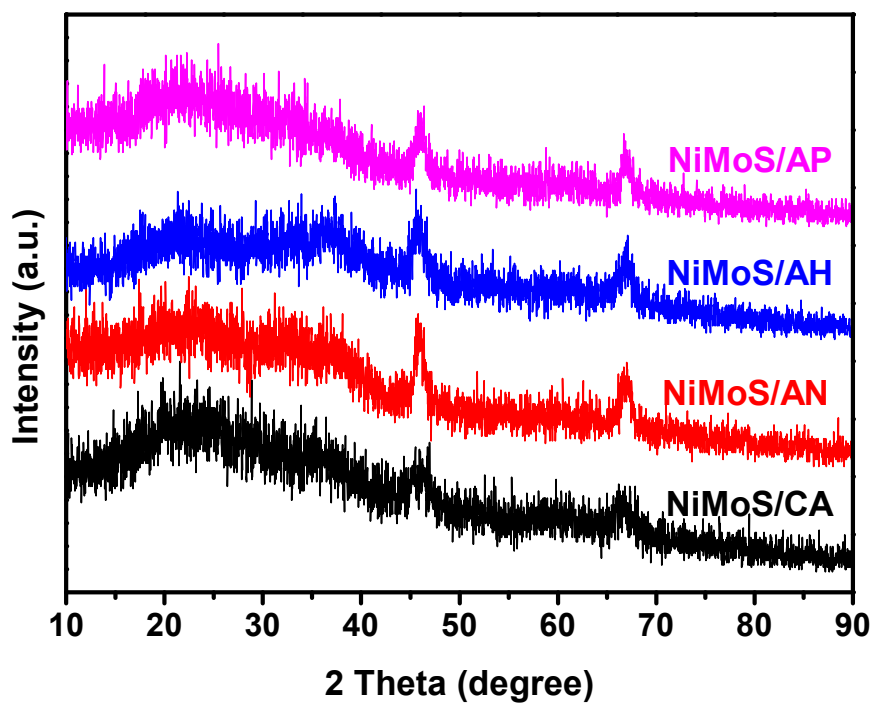


Fig. S2 XRD of the NiMoS/Al₂O₃ samples.

Table S1 HDS of DBT under 1.6 MPa at 525 K.

Catalysts	Product distribution (%)			DBT conv. (%)	HYD/DDS
	BCH	CHB	BP		
NiMo/AN	0.5	12.9	86.6	62.0	0.16
NiMo/CA	3.9	9.6	86.5	56.4	0.16
NiMo/AH	2.0	12.6	85.4	53.6	0.17
NiMo/AR	2.2	11.4	86.4	50.1	0.16

Table S2 Texture properties of as prepared alumina after loading with Ni and Mo.

Samples	Surface Area	Pore Volume	Pore Size
	(m ² g ⁻¹)	(cm ³ g ⁻¹)	(nm)
NiMo/AN	98.4	0.45	22.2
NiMo/CA	238.8	0.52	8.4
NiMo/AH	84.7	0.25	11.5
NiMo/AR	114.8	0.40	15.1